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ABSTRACT

This is the teacher's guide to an easy-to-read, slower paced mathematics text designed for students who have learning, reading, and language problems. Basic concepts and skills about decimals and percents, including computation with decimals and using proportions to solve percent problems, are presented. All 10 units begin with a brief discussion of how decimals or percents are used in real life. Lessons teach only one major concept on each page, and include comprehension exercises. Sixty-five duplicatable, blackline master worksheets are included in the teacher's guide. They are organized to correspond with the student's workbook. Teaching suggestions are briefly presented, as are notes for each page. An answer key for the student's workbook is included. Comments on teaching students with special needs are also presented. (MNS)

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MATH IN ACTION →

# TEACHER'S GUIDE & RESOURCE

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## More than 60 Duplicatable WorkMasters™

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Pre- and Post-tests
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*MATH IN ACTION: Decimals and Percents*

# TEACHER'S GUIDE & RESOURCE

## Teacher's Guide and Duplicatable Blackline WorkMasters™


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# DECIMALS and PERCENTS Teacher's Guide

with answers and strategies for teaching students with special needs

## OVERVIEW

### Designed for Special Needs

***Decimals and Percents,*** a Janus ***Math in Action*** program, was developed for students who have learning, reading, and language problems. A student textbook and accompanying duplicatable blackline WorkMasters help you teach (or reteach) basic concepts and skills about decimals and percents. Students also learn how to compute with decimals and use proportions to solve percent problems.

The Janus *Math in Action* programs include ***Decimals and Percents, Simple Fractions,*** and ***Word Problems.*** The programs can help students fulfill math requirements for graduation. They can be used as the core of or supplement to the math curriculum in mainstreamed or special-ed classrooms, in math labs, in ABE, LEP, or ESL classrooms, or as part of sheltered workshop and vocational training programs.

### Readability

Average readability is under 4.0 according to the modified Spache Readability Formula. Key words are listed on the first page of each unit ("Math Words") and defined in the book's glossary.

## OBJECTIVES

The purposes of *Decimals and Percents* are to help students

- understand decimals and percents and see their use in real life;
- learn strategies that can help them solve math problems containing decimals and percents; and
- apply their learning to everyday situations.

Upon completion of this program, students should be able to accomplish these learning objectives:

1. Give examples of decimals that show a part, a whole, and mixed amounts;
2. Read, write, and say decimals correctly;
3. Rename decimals as equivalent decimals;
4. Compare decimals and put them in order from largest to smallest or smallest to largest;
5. Add, subtract, multiply, and divide decimals;
6. Round decimals to the nearest hundredth or thousandth;
7. Give examples of percents that show a part, a whole, an amount greater than a whole, and a fraction of a percent;
8. Show equivalent percents, decimals, and fractions;
9. Rename percents to ratios;
10. Set up a true proportion containing a percent;
11. Use a proportion to solve percent problems;
12. Rename the following:
    - decimals as fractions and percents;
    - percents as decimals and fractions;
    - fractions as decimals and percents;
    - mixed numbers as mixed decimals and percents;
    - mixed decimals and percents as mixed numbers.

## ABOUT *Decimals and Percents*

Students should have a basic knowledge of fractions, including how to compute with fractions using the four operations, before studying *Decimals and Percents.* (You might wish to precede this study with *Simple Fractions,* which teaches basic fraction concepts to students with special needs.)

### Textbook Format

The textbook is formatted so that students can easily recognize what to do on every page. All units begin with a brief discussion of how decimals or percents are used in real life and list a few key words. Lessons teach only one major concept per page. A comprehension exercise ends each lesson, usually with answers given on the page so students can quickly check their mastery. Most lessons are reinforced by at least one WorkMaster.

All units end with "Check Yourself," a one-page comprehension exercise that measures students' understanding of the major concepts taught in the unit. This page often includes "Bonus Work," an enrichment exercise.

### WorkMaster Format

The duplicatable blackline WorkMasters are organized in units that correspond with those in the workbook. A comprehensive review of the entire workbook is at the end of the WorkMaster book.

The first WorkMaster in each unit is a pre-post test; the last WorkMaster is a unit review. Some WorkMasters are meant to be used repeatedly, with the teacher writing in new problems for each use. A note to the teacher at the bottom of those pages describes the information that should be added.

All WorkMasters reinforce specific concepts taught in each unit of the textbook. A description at the bottom of each WorkMaster states the concept and the corresponding workbook unit and page.

### About the Glossary

The glossary at the end of *Decimals and Percents* lists all key words alphabetically. Each word is divided into syllables to help students decode. Words are purposely defined narrowly to reflect the content of *Decimals and Percents.*

## HOW TO USE *Decimals and Percents*

### Introducing the Workbook

From the start, show students that decimals and percents are part of their daily life. Create a display of newspaper and magazine headlines, store ads, menus, etc. that show decimals and percents. Have a class discussion about how those numbers are used. Next, distribute the textbook. Read the table of contents aloud and discuss with students what they'll be learning. Then read the introduction.

### Teaching a Unit

Have students take the unit pre-post test from the WorkMaster book to help you—and your students—diagnose their needs. Then at the end of the unit, have them take the same test again to assess learning.

Read and discuss the unit opener with your students. Help students pronounce the key words, then have them look up the words in the glossary and use them in sentences.

Carefully guide students through a lesson. Review past learning that can help students understand and learn a new concept or skill. Put model problems from the lesson on the chalkboard and slowly go through the steps. Then have students do part or all of the comprehension exercise in class, working individually. Monitor each student's work, providing help. Review the concepts of the lesson before the period ends. Pass out the appropriate WorkMaster and go over its directions with the students. Students can then work alone or in teams. Students who don't finish the worksheet can do so as homework.

## TEACHING SUGGESTIONS

**Help Your Students Succeed**

Special-needs students need supervision, patience, and encouragement in order to succeed. Reinforce success at every step, making sure students understand a concept or skill before moving on. To help students concentrate on learning concepts about decimals and percents, don't focus on their difficulties with basic computation; instead, allow them to use hand-held calculators. Constantly encourage students to ask questions, reach their own conclusions, and explain in their own words what they've learned.

Vary your teaching techniques to accommodate the different ways that students learn (visually, aurally, and kinesthetically). Give them choices on how they can demonstrate learning: give a class demonstration, tape answers, make posters, etc.

**Get Yourself Ready**

Find out about the specific needs of your students: Dr. Katherine Perez's "Reaching and Teaching Students with Special Needs" (p. DP12), discusses some of those needs. Talk with the special-ed teachers in your facility about techniques you could adapt to your own teaching style.

Plan and gather all necessary materials before teaching *Decimals and Percents*. Here are a few suggestions that can help prepare you:

- Preview the entire contents of the textbook and WorkMasters. Determine which lessons you may need to modify to fit your students' skill levels.
- Plan your daily lessons to include review of past learning and repetition of new key words, concepts, and skills. Make sure you have activities ready for students who finish their work early.
- Have ready the materials you'll need for the day's lesson: all extra-credit and enrichment activities, overhead transparencies, posters, and math realia. Duplicate all the WorkMasters you'll be using. Make answer keys for all exercises, worksheets, tests, etc. Duplicate copies of the Award of Excellence (DP14).

## NOTES ON THE UNITS

WorkMasters that correspond with lessons in the student book are listed in parentheses after each page description. WorkMasters that can be used repeatedly, with the teacher supplying information for each use, are shown in boldface type.

**Introduction**

Students are encouraged to think of how decimals and percents are used in their everyday lives.
**Problems** **a.** 25% **b.** $7.23 **c.** $60.40

**Unit 1: Decimals Are Part of Our Lives**
**Key words:** *digit, numeral, place value*

This unit teaches the kinds of amounts decimals show. Students also learn how to read and write decimals. Manipulatives, such as base-ten blocks, can help students get a hands-on understanding of decimals.

PAGE 5: **Decimals Are Part of Our Lives**

For extra credit, have students compile a list of actual places where they see decimals. (Unit pre-post test DP15)

PAGE 6: **Showing Parts of Whole Amounts**

Decimals are a kind of fraction. They can show parts of a whole amount, whole amounts, and mixed amounts. (DP16)

PAGE 7: **The Powers of Ten**

The denominators of decimal fractions are powers of ten. (DP17)

PAGE 8: **Fractions or Decimals**

Decimals (decimal fractions) and fractions (common fractions) can show the same amount. (Finding equivalent decimals and fractions is taught in Unit 10.)

PAGE 9: **Every Place Has a Value**

Help students conclude that the decimal point separates the whole number and the decimal places, and that it is the center of the decimal system. You might expand this lesson by teaching how the place value of a digit is increased ten times for each place it is moved to the left and is decreased ten times for each place it is moved to the right. (**DP18:** teacher writes in or dictates numbers that have various whole number and decimal place values.)

PAGE 10: **Reading Decimals**

The value of a decimal depends on the number of decimal places the decimal has. (**DP19:** teacher writes in various kinds of numbers—tenths, hundredths, whole numbers, mixed decimals, etc.)

PAGE 11: **Writing Decimals**

Students learn how to write decimals, focusing on the number of digits required to show tenths, hundredths, and thousandths. **(DP19)**

PAGE 12: **Filling All the Places**

Students learn to write zeros as place holders in hundredths and thousandths. To help students learn kinesthetically, have them draw blank lines for each decimal place, then write digits on the lines. **(DP19)**

PAGE 13: **Whole Amounts and Decimals**

Students learn to read and write mixed decimals. **(DP19)**

PAGE 14: **Unit Review**

Students apply what they learned in this unit. (Unit review DP20; book review DP80)

**Unit 2: Comparing Decimals**
**Key words:** *like decimals, rename, unlike decimals*

This unit teaches how to rename decimals, compare them, and put them in order.

PAGE 15: **Comparing Decimals**

Have students discuss other instances in which they would compare decimals. (Unit pre-post test DP21)

PAGE 16: **Like or Unlike?**

Like decimals have the same number of decimal places, and unlike decimals have different numbers of decimal places. (**DP22:** teacher writes or dictates decimals; DP24: ask students to identify the like and unlike decimals.)

PAGE 17: **Renaming Decimals**

Unlike decimals are renamed as like decimals by writing zeros after the last digit (annexing zeros) until the decimals have the same number of decimal places.

PAGE 17: **Renaming Mixed Decimals**

Make sure students understand that only the decimal places of a mixed decimal are renamed. (DP23; DP24: ask students to rename decimals.)

PAGE 18: **Which Is Greater?**

Students learn that the larger the numeral of a decimal, the greater its value.

PAGE 18: **Comparing Mixed Decimals**

Students learn to compare only the decimals of mixed decimals when the whole numbers are the same. (DP24)

PAGE 19: **Putting Decimals in Order**
Students learn to put decimals and mixed decimals in order from smallest to largest.

PAGE 19: **Decimal Sizes**
Students learn that tenth is greater than hundredth, hundredth is greater than thousandth, etc. (DP25)

PAGE 20: **Unit Review**
Students apply what they learned in this unit. (Unit review DP26; book review DP80)

**Unit 3: Adding and Subtracting Decimals**
**Key words:** *decimal place, line up*
This unit teaches how to add and subtract decimals correctly. You might have students make addition and subtraction checklists of the steps for handy references.

PAGE 21: **Adding and Subtracting Decimals**
Review how to add and subtract whole numbers before beginning this unit. (Unit pre-post test DP27)

PAGE 22: **Lining Up**
The problems on this page do not have operation signs so that students can focus *only* on lining up numbers. Graph paper or lined notepaper turned horizontally can help students line up problems. (DP28—be sure that students have lined up decimal points correctly in Practices 1–3; **DP29; DP30:** write in or dictate numbers. Students only line up problems on both worksheets.)

PAGE 23: **Renaming Unlike Decimals**
Unlike decimals should be renamed as like decimals before they are added or subtracted. (**DP29; DP30.** Have students only rename the decimals.)

PAGE 24: **Mixed Decimals and Whole Numbers**
This page shows how to line up and rename unlike decimals in mixed decimals and whole numbers. (**DP29; DP30.** Students only line up and rename decimals on both worksheets. Teacher adds various mixed decimals and whole numbers.)

PAGE 25: **Adding Decimals**
You might teach students to check their sums by adding numbers in a different order or by using a calculator. (DP31, Practices 1 and 2)

PAGE 26: **Carrying**
Review carrying in whole-number problems. (DP31, Practices 3 and 4)

PAGE 27: **Subtracting Decimals**
Have students check their answers by adding the difference to the number subtracted (the subtrahend) or by using a calculator. (DP32, Practice 1)

PAGE 28: **Borrowing**
Review borrowing with whole-number problems. (DP32, Practices 2–4)

PAGE 29: **Unit Review**
Students apply what they've learned. (**DP33:** students create their own worksheets from realia; Unit review DP34; book review DP80)

**Unit 4: Multiplying Decimals**
**Key words:** *factor, product*
This unit teaches how to multiply decimals correctly. Have students make a checklist of the steps for a handy reference.

PAGE 30: **Multiplying Decimals**
Encourage students to come up with other situations in which they would multiply decimals. (Unit pre-post test DP35)

PAGE 31: **Factors and Products**
The terms *factor* and *product* are reviewed.

PAGE 31: **Writing the Problem**
Instruct students to write the factor with fewer digits (or the one that's easier for them to multiply by) on the bottom of the problem. (DP36: students only write the problems.)

PAGE 32: **Where Does the Decimal Point Go?**
The number of decimal places in a product is the same as the total number of decimal places in the factors. (DP36, DP37)

PAGE 33: **Getting the Correct Product**
Teach students to check their answers by using a calculator or by multiplying the factors in a different order. (**DP38,** Practice 4. Teacher writes in or dictates factors that produce products *not requiring* added zeros as place holders.)

PAGE 34: **Completing the Product**
Students learn to write zeros as placeholders in a product when there are more decimal places than digits. (**DP38,** Practice 4. Teacher writes in or dictates factors that produce products *requiring* added zeros as place holders.)

PAGE 35: **Rounding Decimals**
Rounding money to the nearest hundredth (or cent or penny) is taught. (DP39)

PAGE 36: **Unit Review**
Students apply what they've learned in this unit. (Unit review DP40; book review DP80)

**Unit 5: Dividing Decimals**
**Key words:** *dividend, divisor, quotient, remainder*
This unit teaches how to divide decimals. Have students make a checklist of the steps.

PAGE 37: **Dividing Decimals**
Review how to divide whole numbers before students begin this unit. (Unit pre-post test DP41. Be sure students write problems correctly.)

PAGE 38: **Division Words**
Students review *divisor, dividend, quotient.*

PAGE 38: **Copy the Problem Correctly**
Remind students that in a math sentence the number at the right of the division symbol is *always* the number to divide by. Teach them to read that symbol as *divided by.* (DP42; DP43. Have students only set up problems on both worksheets.)

PAGE 39: **Dividing by a Whole Number**
Have students write the decimal point of the quotient directly above the decimal point in the dividend before they do the problem. After they have solved the problem, have them make sure that decimal points and decimal places in the quotient and dividend line up. (DP42, Practice 1)

PAGE 40: **Filling All the Decimal Places**
Students learn that sometimes they must write zeros to fill decimal places in quotients. (DP42)

PAGE 41: **Dividing with Decimals**
The lesson teaches that a decimal in the divisor must be renamed as a whole number before the problem can be divided and that the dividend must also be renamed. Mention to students that they are multiplying each term by the same power of ten when they move the decimal points. (DP43, Practices 3 and 4)

PAGE 42: **Getting a Problem to Divide Evenly**
A problem may be divided evenly when zeros are added (annexed) to the last digit in the dividend. (DP42, Practice 4; DP43, Practices 3 and 4)

PAGE 43: **Rounding Quotients**
Students round quotients to the nearest hundredth or thousandth. (**DP44:** teacher indicates which to round to; DP45)

PAGE 44: **Unit Review**
Students apply what they've learned in this unit. (Unit review DP46; book review DP80)

**Unit 6: Percents**
**Key words:** *one hundred percent, percent*
This unit teaches that percents are hundredths of a whole amount.

PAGE 45: **Percents**
Help students conclude that using percents is another way to talk about parts of whole amounts, or fractions. (Unit pre-post test DP47)

PAGE 46: **What Is a Percent?**
A percent is a part of a whole amount that is divided into 100 equal parts. (**DP48**. Teacher shades in shapes.)

PAGE 47: **Writing Percents**
Students learn that a percent is a kind of fraction that has a denominator of 100. (**DP48**)

PAGE 48: **A Hundred Percent**
100% can represent one whole thing or a group of many things. (**DP49.** Students write in various objects and amounts.)

PAGE 49: **How Many Hundredths?**
All percents of a whole amount add up to 100%. (**DP49;** DP50)

PAGE 50: **More Than 100%**
Students learn that percents can show amounts that are greater than 100%.

PAGE 50: **100% Plus a Fraction**
Help students conclude that percents, such as .8% or 3/4%, are fractions of a percent. (DP51)

PAGE 51: **Unit Review**
Students apply what they learned in this unit. (Unit review DP52; book review DP80)

**Unit 7: Ratios**
**Key words:** *lowest terms, ratio, reduce*
This unit gets students ready to work on percent problems. Students learn how to rename percents as percent ratios, focusing only on ratios that compare a part to its whole amount.

PAGE 52: **Ratios**
Teach students that a ratio is a comparison of two numbers by division. Also mention that because a fraction compares a part to its whole amount, it is also a ratio. (Unit pre-post test DP53)

PAGE 53: **Writing Ratios**
Ratios that show a part compared to its whole amount can be written with a colon. Students read the colon as *out of* (instead of *to* or *of*) to help them better remember the relationship of a part to its whole.

PAGE 53: **Writing Ratios as Fractions**
Ratios can also be written as fractions. Fraction ratios should also be read as *out of*. (**DP54.** Teacher shades in parts of the shapes.)

PAGE 54: **Percents Are Ratios**
Help students conclude that percents also compare a part to a whole amount; thus they can be shown as a ratio. (DP55)

PAGE 55: **Showing Ratios in Lowest Terms**
Students can reduce ratios the same way fractions are reduced. To review reducing, see pages 30 and 31 in *Simple Fractions*. (DP56)

PAGE 56: **Finding Ratios in Word Problems**
Students learn to find ratios in word problems involving percents. (**DP57.** Teacher writes in or dictates amounts.)

PAGE 57: **Unit Review**
Students apply what they've learned in this unit. (Unit review DP58; book review DP80)

**Unit 8: Proportions**
**Key words:** *cross product, equivalent ratio, proportion*
This unit teaches how to set up a proportion containing a percent. As with ratios, this unit gets students ready to figure out percents and thus teaches only very basic concepts about proportions.

PAGE 58: **Proportions**
Have students give other examples from the chart of equivalent percents and their actual amounts. (Unit pre-post test DP59)

PAGE 59: **Equivalent Ratios**
This lesson shows how two equivalent ratios show a same amount.

PAGE 59: **Writing and Reading Proportions**
Students learn to write proportions with fraction ratios. (**DP60:** teacher shades in parts of shapes in **A** and writes in or dictates equivalent ratios in **B.**)

PAGE 60: **Check by Multiplying**
A proportion can be checked by finding the cross products of the two ratios.

PAGE 60: **Check by Reducing**
A proportion can also be checked by reducing both ratios to lowest terms. (**DP61.** Teacher indicates which method to use.)

PAGE 61: **Using Proportions with Percents**
Students learn how to set up a proportion with a percent. (DP62; DP63)

PAGE 62: **Dropping Zeros**
Students learn the shortcut of dropping zeros in ratios before reducing them.

PAGE 62: **Zeros in a Proportion**
Students drop zeros in a proportion when they find out if it is true. (DP63)

PAGE 63: **Unit Review**
Students apply what they learned in this unit. (Unit review DP64; book review DP80)

**Unit 9: Solving Percent Problems**
**Key words:** *known term, unknown term*
This unit teaches students to use a proportion to solve three kinds of percent problems. The same procedure is used each time, rather than using three different procedures, thus making it easier for special-needs students to solve those kinds of problems.

PAGE 64: **Solving Percent Problems**

Throughout the unit, remind students that they use one simple procedure for all the percent problems: they multiply the two known terms of a proportion and divide that product by the third known term. After teaching this unit and Unit 10, you might expand students' learning by teaching the traditional procedures for solving percent problems. By using both procedures, students can accurately check the correctness of their answers. For models of the traditional procedures, see notes below for pages 67, 68, and 69. (Unit pre-post test DP65)

PAGE 65: **Four Terms**

Students learn the kinds of terms that make up a percent proportion. (DP66)

PAGE 65: **Known and Unknown Terms**

Students learn how to write a proportion with three known terms and one unknown term. Help students conclude that the denominator of a percent is always 100 and that the number after *of* (in a problem) is always the actual total.

PAGE 66: **Finding the Unknown Term**

Steps for finding an unknown term are taught. Review reducing terms and dropping zeros before teaching this lesson. (DP67; DP68; DP69)

PAGE 67: **Finding a Part of the Total**

Students learn to find an unknown part of a total amount by using a proportion. (Traditional: First, rename the percent as a decimal. Then multiply the total amount by the decimal. *Example:* 50% of 80 = ? is solved by .50 × 80 = 40) (DP67)

PAGE 68: **Finding the Percent**

Students find an unknown percent by using a proportion. (Traditional: First divide the actual part by the actual total. Then rename the decimal as a percent. *Example:* 40 is ?% of 80 is solved by 40 ÷ 80 = .50, which is renamed as 50%.) (DP68)

PAGE 69: **Finding the Total Amount**

Students find an unknown total amount by using a proportion. (Traditional: First rename the percent as a decimal. Then divide the actual part by the decimal. *Example:* 40 is 50% of ? is solved by 40 ÷ .50 = 80) (DP69)

PAGE 70: **Unit Review**

Students apply what they learned in this unit. (Unit review DP70; book review DP80)

**Unit 10: Renaming Decimals and Percents**

**Key word:** *simplify*

This unit teaches how to find decimal, fraction, and percent equivalents.

PAGE 71: **Renaming Decimals and Percents**

Help students decide which numbers are easier for them to figure with—fractions, decimals, or percents. (Unit pre-post test DP71)

PAGE 72: **Percents to Fractions**

Students learn to rename a percent as a fraction and then reduce the fraction to its lowest terms. (DP72)

PAGE 73: **Decimals to Fractions**

This lesson shows how to rename decimals as fractions and then reduce the fractions to their lowest terms. (DP73)

PAGE 74: **Decimals to Percents**

Students find a percent by using a proportion, then count decimal places to rename decimals as percents. (DP74)

PAGE 75: **Percents to Decimals**

Help students conclude that when they are renaming a percent as a decimal, they are dividing the numeral of the percent by the denominator, or 100. (DP75)

PAGE 76: **Renaming Fractions as Decimals and Percents**

When a fraction has a denominator that is a power of ten, students need only rewrite the fraction as a decimal and then rename the decimal as a percent by counting two decimal places to the right. (DP76 A; DP77 A)

PAGE 77: **Fractions with Other Denominators**

Students use a proportion to rename fractions with denominators that are not powers of ten. Fractions are first renamed as percents, then as decimals by counting decimal places.

PAGE 77: **Renaming Fractions by Dividing**

Students also learn to rename fractions by dividing their numerators by their denominators. This lesson also discusses repeating fractions and remainders. Remind students that an ellipsis after the quotient and dividend indicates that the problem can still be divided. You might also teach students that instead of writing an ellipsis they can write a bar over the last repeating digit in quotients such as .33 and 33.33%. (DP76; DP77)

PAGE 78: **Renaming Mixed Amounts**

This lesson shows how to rename decimals and percents as mixed numbers, and then mixed numbers as decimals and percents. (DP78. Remind students to reduce fractions to lowest terms in A and B.)

PAGE 79: **Unit Review**

Students apply what they learned in this unit. (Unit Review DP79; book review DP80)

***Decimals and Percents* Student Text and WorkMaster Answer Key**

*In each unit, student text answers are followed by WorkMaster answers.*

## Unit 1: Decimals Are Part of Our Lives

**Page 11 Exercise** **1.** .4 **2.** .42 **3.** .8 **4.** .168 **5.** .30 **6.** .16 **7.** .9 **8.** .13 **9.** .300 **10.** .1

**Page 14 Unit Review** **1.a.** .2 **b.** .9 **c.** .75 **d.** .40 **2.a.** tenths **b.** ones **c.** tens **d.** hundredths **e.** thousandths **f.** tenths **3.a.** 1.3 **b.** .35 **c.** .017 **d.** 11.17 **e.** 5.008 **4.a.** power **b.** decimals **c.** place value **d.** digit **e.** numeral

**DP15** **A.** 1, 2, 3, 4, 6 **B.1.** .5 **2.** .6 **3.** .2 **4.** .40 **C.1.** b **2.** a **3.** a **4.** a **5.** a **D.1.** .8 **2.** 1.15 **3.** 13.0 **4.** 600.30

**DP16 What Kind of Amount?** **1.** mixed **2.** part **3.** mixed **4.** part **5.** part **6.** whole **7.** mixed **8.** mixed **9.** part **Finding Decimal Amounts** (Answers will vary.)

**DP17** **A.1.** a **2.** c **3.** a **4.** b **5.** b **6.** c **7.** a **8.** b **9.** a **B.** (Answers will vary.)

**DP18** Teacher creates answer key.

**DP19** Teacher creates answer key.

**DP20** **A.1.** 4; 13.000; 77,643.00 **2.** 0.6; .34; .405; .00708; .1 **3.** 4.6; 1.008; 438.5096; 5.009. **B.1.b.** 8 hundredths **c.** 2 thousandths **2.a.** 4 tenths **b.** 5 hundredths **3.a.** 0 tenths **b.** 1 hundredth **c.** 7 thousandths **4.a.** 4 tenths **b.** 0 hundredths **c.** 3 thousandths **C.** (Answers will vary.) **D.1.** $12.89 **2.** $3.00 **3.** $101.68 **4.** $1.07 **5.** $.89 **6.** $259.12

## Unit 2: Comparing Decimals

**Page 20 Unit Review** **1.a.** .70, .95 **b.** .251, .170
**c.** .006, .600 **d.** 1.50, 1.32, 1.05
**e.** 8.060, 8.200, 8.198 **f.** 6.107, 6.230, 6.080
**2.a.** .25 > .20 **b.** .090 > .009 **c.** .300 > .299
**d.** .573 < .650 **e.** .10 > .01 **f.** .075 < .700
**3.a.** 4.5 < 4.9 **b.** 13.89 > 13.50 **c.** 6.098 > 3.300
**d.** 10.010 < 10.384 **e.** 17.6898 < 18.9000
**f.** 103.48 > 103.11 **4.a.** .6 > .5 > .1
**b.** .40 > .18 > .05 **c.** .538 > .136 > .095
**d.** .7 > .07 > .007 **e.** 8.4 > 7.85 > 6.1
**f.** 5.02 > 3.12 > 2.9 **g.** 2.62 > 2.4 > 2.365
**h.** 7.353 > 7.10 > 7.03 **5.a.** unlike decimals
**b.** rename **c.** like decimals

**DP21** **A.1.** A **2.** U **3.** U **4.** A **5.** A **6.** U
**B.1.** .50 because .43 has two decimal places
**2.** 2.100 because .321 has three decimal places
**3.** 0.860 because .089 has three decimal places
**4.** 1.20 because 3.45 has two decimal places
**C.1.** .21 < .23 **2.** .302 < .35 **3.** .033 < .324
**4.** 5.21 > 5.1 **5.** 10.053 < 11.062 **6.** 0.1 > 0.001
**D.1.** .2 < .3 < .9 **2.** .37 < .60 < .72
**3.** .006 < .077 < .079 **4.** .527 < .53 < .6
**5.** 1.2 < 2.02 < 2.216 **6.** 8.5 < 8.52 < 8.521
**7.** .09 < .9 < 1.9

**DP22** Teacher creates answer key.

**DP23** **A.2.** .921, .600, .370 **3.** 6.00, 2.14, 8.20
**4.** .123, .700, .640 **5.** 9.020, 6.400, 3.777
**6.** 18.03, 26.34, 12.90 **7.** .08, 1.10, 1.30
**8.** 4.330, 4.300, 4.039 **9.** 1.22, .70, .20
**10.** .7500, .0338, .5830 **11.** .0010, .1000, .1012
**B.2.** .420 **3.** 5.200 **4.** 2.0 **5.** 8.300 **6.** .40
**7.** .7270

**DP24** **A.(Practice 1)** **1.** .31 > .30 **2.** .660 < .686
**3.** .50 > .49 **4.** .012 < .900 **5.** .290 > .083
**6.** 0.300 < 0.313 **7.** .888 > .400 **8.** .0500 > .0077
**(Practice 2)** **1.** 1.15 < 1.20 **2.** 4.87 > 4.80
**3.** 3.563 > 3.080 **4.** 3.700 < 3.701 **5.** 4.20 > 4.19
**6.** 1.0080 < 1.2234 **7.** 4.38000 > 4.10203
**8.** 100.124 > 100.090 **(Practice 3)** **1.** 4.10 > 3.96
**2.** 1.907 > .980 **3.** 3.00 < 4.33 **4.** 21.939 > 20.090
**5.** .9677 < 9.6000 **6.** 11.120 < 12.983
**7.** 2.4189 < 24.1800 **8.** 0.9978 < 9.0100
**B.2.** 3.27 < 3.31 **3.** 3.27 < 3.96 **4.** 3.88 < 3.96
**5.** 3.31 < 3.96 **6.** 1.6 > 1.5 **7.** 1.5 < 1.9
**8.** 1.9 > 1.6

**DP25** **A.2.** .660 < .664 < .723 **3.** .40 < 1.47 < 1.74
**4.** 3.041 < 3.400 < 3.405 **5.** 38.20 < 38.22 < 38.23
**6.** 2.324 < 3.400 < 3.420 **7.** .60 < .66 < 1.06
**8.** 10.030 < 100.272 < 100.300
**9.** 3.500 < 4.000 < 5.123 **B.1.** 2, 3, 1 **2.** 1, 2, 3
**3.** 2, 1, 3 **4.** 2, 3, 1 **Bonus** Pokey had the best time.

**DP26** **A.1.** .720 > .517 > .388
**2.** 3.300 > 1.010 > .896 **3.** 9.290 > 9.220 > 9.027
**4.** .400 > .044 > .040 **5.** 23.100 > 22.780 > 21.999
**B.1.** correct **2.** .199 < .5 < .72 < .873
**3.** 2.3 < 12.1 < 12.23 < 12.3 **4.** correct **5.** correct
**6.** .012 < .019 < .02 < .03
**7.** 1.3 < 1.45 < 2.12 < 2.542
**8.** 12.003 < 12.09 < 12.12 < 12.803

## Unit 3: Adding and Subtracting Decimals

**Page 29 Unit Review** **1.a.** 1.083 **b.** 12.74
**c.** 30.90 **d.** 10.29 **2.a.** .23 **b.** 2.0 **c.** $2.62
**d.** .278 **3.a.** 6.08 **b.** 2.421 **c.** .238 **d.** 16.289
**4.a.** 1.348 **b.** .455 **c.** 19.938 **d.** 1.111 **5.a.** 18.8
**b.** 5.23 **c.** 2.38 **d.** 17.07 **6.a.** line up
**b.** decimal points **Bonus** **1.** one problem
(2.89 + 5.6 + 10.175 + 1.335 = 20)

**DP27** **A.1.** The decimals do not have the same place value. **2.** The decimal points are not lined up.
**3.** The numbers have not been renamed.
**4.** The decimals do not have the same place value.
**B.1.** .60 **2.** $7.39 **3.** 4.53 **4.** 19.7 **5.** $71.18
**C.1.** .24 **2.** 10.78 **3.** 1.485 **4.** 1.8 **5.** 16.6

**DP28** Teacher creates answer key.

**DP29** Teacher creates answer key.

**DP30** Teacher creates answer key.

**DP31** **(Practice 1)** **1.** .5 **2.** .39 **3.** .999 **4.** .9
**5.** .99 **6.** 51.98 **7.** .889 **8.** 18.99 **9.** 3.899
**(Practice 2)** **1.** .65 **2.** 2.87 **3.** .579 **4.** 10.961
**5.** .893 **6.** 4.945 **7.** 176.85 **8.** 19.999 **9.** 22.985
**(Practice 3)** **1.** 1.67 **2.** 4.16 **3.** 1.902 **4.** 13.368
**5.** 6.884 **6.** 31.68 **7.** 17.849 **8.** 179.57 **9.** 92.65
**(Practice 4)** **1.** $21.83 **2.** $4.58 **3.** $208.68
**4.** $7569.93

**DP32** **(Practice 1)** **1.** .5 **2.** .25 **3.** .24 **4.** .111
**5.** 1.2 **6.** 1.22 **7.** 11.23 **8.** 1.705 **9.** 10.4
**(Practice 2)** **1.** .46 **2.** .19 **3.** .222 **4.** .195
**5.** .146 **6.** .138 **7.** .037 **8.** .126 **9.** .025
**(Practice 3)** **1.** 9.67 **2.** 2.236 **3.** 2.05 **4.** 1.65
**5.** 5.53 **6.** 3.983 **7.** 4.65 **8.** 1.45 **9.** .921
**(Practice 4)** **1.** $31.63 **2.** $456.07 **3.** .47 minutes
**4.** .12 meter

**DP33** Answers will vary.

**DP34** **A.1.** 3.32 **2.** .763 **3.** 3.27 **4.** .91 **5.** 4.905
**6.** .69 **B.1.** .760 **2.** .200 **3.** .70 **4.** 2.100 **5.** 27.00
**6.** 18.000 **C.** (Answers will vary.)

## Unit 4: Multiplying Decimals

**Page 36 Unit Review** **1.a.** 13.95 **b.** .04635
**c.** 26.3498 **d.** .070 **e.** .00678 **f.** 18.00 **2.a.** .8943
**b.** .0054 **c.** .4 **d.** .3101 **e.** 275.268 **f.** .016616
**3.a.** $9.91 **b.** $62.81 **c.** $1.37 **4.a.** product
**b.** factor **c.** round **Bonus Work** **3.a.** $119.31
**b.** $222.86 **c.** $317.86

**DP35** **A.1.** 2 **2.** 4 **3.** 5 **4.** 4 **B.** The product should have: **1.** three decimal places **2.** four decimal places
**3.** three decimal places **C.1.** .00632 **2.** .000408
**3.** .074 **4.** .0078 **D.1.** $6.65 **2.** 19.5 bags

**DP36** **A.1.** All factors have a total of 2 decimal places **2.** All factors have a total of 1 decimal place **3.** All factors have a total of 4 decimal places **4.** All factors have a total of 5 decimal places **B.1.** 2 **2.** 3 **3.** 4 **4.** 1 **5.** 2 **6.** 3 **7.** 5
**8.** 5 **9.** 4 **10.** 5 **Bonus** **A.1.** 28.14 **2.** 174.6
**3.** 62.1180 **4.** 4.01436 **B.1.** .10 **2.** .140 **3.** .6634
**4.** 25.5 **5.** 76.16 **6.** 1.072 **7.** .62073 **8.** 1.36656
**9.** 187.9990 **10.** .43848

**DP37** **A.1.** 13.8 **2.** 13.8 **3.** 1.38 **4.** .138 **5.** 1.38
**6.** 20.4 **7.** 2.04 **8.** .204 **9.** 2.04 **10.** .204
**11.** .1029 **12.** 1.029 **13.** .1029 **14.** .1029 **15.** 10.29
**B.1.** 75.95 **2.** 135.625 **3.** 21.6783 **4.** 25.0 **5.** 62.00
**6.** 257.5225 **7.** 296.270 **8.** 608.45 **9.** 553.625

**DP38** Teacher creates answer key.

**DP39** **A.1.** b **2.** a **3.** b **4.** a **5.** b **6.** b **7.** a **8.** b
**B.1.** $12.10 **2.** $2.94 **3.** $49.07 **4.** $265.53
**5.** $73.34 **6.** $7.74 **7.** $4363.65 **8.** $15.57

**DP40** **A.1.** 1.7 × 4; .8 × 4 **2.** 1.7 × .8; .05 × 4 **3.** 1.7 × .05; 1.08 × 4; .05 × .8; 1.005 × 4 **4.** 1.7 × 1.005; 1.7 × .108; 1.005 × .8; .8 × .108 **5.** 1.005 × .05; .05 × .108 **6.** 1.005 × .108 **B.1.** 12 × .5 = 6.0 **2.** 9.8 × 17.3 = 169.54 **C.1.** 7.2 **2.** .1872 **3.** 16.578 **4.** .0126 **5.** $3.89 **6.** $22.88

## Unit 5: Dividing Decimals

**Page 44 Unit Review** **1.a.** 2.08; The dividend was incorrectly copied and divided. **b.** 300; The divisor and dividend were not renamed. **c.** .005; The problem was incorrectly divided. An additional zero is required in the quotient. **d.** .004; The dividend was renamed incorrectly. **e.** 71.22; The dividend should not have been renamed. **f.** 3000; The dividend was renamed incorrectly. **2.a.** 6.1 **b.** .04 **c.** .69 **d.** 2.29 **e.** $.22 **f.** $.25 **g.** .4 **h.** 21.65 **i.** 2.5 **j.** .05 **k.** $9.56 **l.** $33.43 **3.a.** 29.8 **b.** 55.07 **c.** 20-ounce box **4.a.** divisor **b.** quotient **c.** dividend **d.** remainder

**DP41** **A.1.** .45 **2.** 5.8 **3.** .2 **4.** .002 **B.1.** .37 **2.** 26.0 **3.** 22.222 **4.** 81.46 **5.** 30.768 **C.1.** .11 **2.** .077 **3.** 308.333 **4.** 80 **5.** 6000 **6.** 11.667

**DP42** **(Practice 1)** **1.** 33.6 **2.** 16.8 **3.** 2.24 **4.** .21 **5.** .5 **6.** .25 **7.** .61 **8.** 6.02 **(Practice 2)** **1.** .183 **2.** .091 **3.** .008 **4.** .009 **5.** .007 **6.** .014 **7.** .006 **8.** .04 **(Practice 3)** **1.** .05 **2.** .08 **3.** .0325 **4.** .0575 **5.** .56 **6.** .18 **7.** .375 **8.** 3.25 **(Practice 4)** **1.** .05225 **2.** .704 **3.** .56 **4.** .175 **5.** .567 **6.** 6.456 **7.** .1875 **8.** .0125 **(Practice 5)** **1.** 3.375 **2.** 3.125 **3.** 1.25 **4.** $1.50

**DP43** **(Practice 1)** **1.** 2 **2.** 1.8 **3.** 11 **4.** 2.1 **5.** 6 **6.** 8 **7.** 71 **8.** 5.2 **(Practice 2)** **1.** 24 **2.** .64 **3.** 20.1 **4.** .4 **5.** .466. **6.** 172.5 **7.** .1 **8.** 4.4 **(Practice 3)** **1.** 20 **2.** 306 **3.** 70 **4.** 10 **5.** 6.95 **6.** 5 **7.** .3 **8.** 150.4 **(Practice 4)** **1.** 172.5 **2.** 8.92 **3.** .86 **4.** 290 **5.** .6 **6.** 6.24 **7.** 300 **8.** 60 **(Practice 5)** **1.** 36 **2.** 28 **3.** $1.40 **4.** $1.26

**DP44** **1.** .02; .015 **2.** .09; .092 **3.** 26.62; 26.622 **4.** 5.71; 5.714 **5.** 439.33; 439.333 **6.** 3.33; 3.330 **7.** 3.06; 3.056 **8.** .18; .184 **9.** 10.75; 10.746 **10.** 90.91; 90.909

**DP45** **1.a.** 3.59 **b.** 3.590 **2.a.** 4.90 **b.** 4.895 **3.a.** 12.04 **b.** 12.041 **4.a.** 1.94 **b.** 1.939 **5.a.** 2.79 **b.** 2.789 **6.a.** .43 **b.** .433 **7.a.** 12.42 **b.** 12.424 **8.a.** 10.11 **b.** 10.111 **9.a.** .90 **b.** .896 **10.a.** 24.09 **b.** 24.089 **11.a.** .00 **b.** .002 **12.a.** 1.45 **b.** 1.455 **13.a.** 50.02 **b.** 50.023 **14.a.** .01 **b.** .007 **15.a.** 248.32 **b.** 248.318

**DP46** **A.1.** The divisor is already a whole number, so the dividend is not renamed. ***Quotient:*** .12 **2.** The divisor has one decimal place, so the decimal point moves one decimal place right in both the divisor and dividend. ***Quotient:*** 8 **3.** The divisor has one decimal place, so the decimal point moves one decimal place right in both the divisor and dividend. ***Quotient:*** .2 **4.** The divisor has three decimal places, so the decimal point moves three decimal places right in both the divisor and dividend. ***Quotient:*** 17650 **B.1.** $.30 **2.** 3.59 **3.** 55.33 **4.** $1.15 **5.** $4.09 **6.** 18.20

## Unit 6: Percents

**Page 51 Unit Review** **1.** (Answers will vary.) **2.a.** 18 **b.** 42 **c.** 87 **d.** 78 **e.** 11 **f.** 39 **3.a.** 15% **b.** 65% **c.** 18% **4.a.** percent **b.** one hundred percent

**DP47** **A.** 2.; 3; 5; 7; 8 **B.1.** 42% **2.** 50% **3.** 15% **4.** 100% **5.** 8% **C.1.** 20% **2.** 65% **D.1.** 110% **2.** 100% **3.** 35% **E.1.** 10% **2.** 3% **3.** 25% **4.** 100% **5.** 40% **6.** 65% **7.** 150% **8.** 20%

**DP48** Teacher creates answer key.

**DP49** (Answers will vary.)

**DP50** **A.1.a.** 90% **b.** 50% **c.** 30% **d.** 20% **2.a.** 96% **b.** 84% **c.** 64% **d.** 24% **e.** 12% **B.1.** b **2.** c **3.** c **4.** a **5.** b

**DP51** **A.1.** 18% **2.** 100% **3.** 71.2% **4.** 223% **5.** 100% **6.** 100% **7.** 93 1/2% **8.** 119% **B.1.** 71.8% **2.** 14% **3.** 40% **4.** 61%

**DP52** **A.** *Across:* **4.** fractions **5.** percent **6.** whole *Down* **1.** part **2.** hundredth **3.** greater **7.** equal **B.1.** 30% **2.** 36% **3.** 6% **4.** 72% **5.** 28%

## Unit 7: Ratios

**Page 57 Unit Review** **1.a.** 2 shows a part; 3 shows a whole. **b.** 5 shows a part; 11 shows a whole. **2.a.** 2/3 **b.** 1/2 **c.** 22/25 **d.** 3/25 **e.** 49/81 **f.** 33/50 **3.a.** 46/121 **b.** 2/49 **c.** 4/7 **d.** 33/100 **e.** 18/25 **f.** 9/200 **4.a.** 19/28 **b.** 3/4 **c.** 1/5 **5.a.** ratios **b.** reduce **c.** lowest terms **Bonus** (Answers will vary.)

**DP53** **A.** 1; 3; 5; 8 **B.1.** 2:14; 2/14 **2.** 338:1863; 338/1863 **3.** 5:10; 5/10 **4.** 87:100; 87/100 **C.1.** 25/100. 2. 50/100 **3.** 62/100 **4.** 88/100 **5.** 17/100 **6.** 112/100 **D.1.** 3/10 **2.** 11/20; 9/20

**DP54** Teacher creates answer key.

**DP55** **1.** 51:100; 51/100 **2.** 49:100; 49/100 **3.** 1:100; 1/100 **4.** 22:100; 22/100 **5.** 26:100; 26/100 **6.** 28:100; 28/100 **7.** 21:100; 21/100 **8.** 2:100; 2/100 **9.** 29:100; 29/100 **10.** 23:100; 23/100 **11.** 17:100; 17/100 **12.** 10:100; 10/100 **13.** 13:100; 13/100 **14.** 1:100; 1/100 **15.** 7:100; 7/100

**DP56** **A.1.** 4:8; 1/2 **2.** 6:15; 2/5 **3.** 10:24; 5/12 **4.** 9:36; 1/4 **5.** 25:80; 5/16 **6.** 18:32; 9/16 **7.** 27:54; 1/2 **8.** 42:120; 7/20 **9.** 78:156; 1/2 **10.** 98:180; 49/90 **11.** 126:360; 7/20 **B.1.** 6:100; 3/50 **2.** 15:100; 3/20 **3.** 18:100; 9/50 **4.** 10:100; 1/10 **5.** 32:100; 8/25 **6.** 25:100; 1/4 **7.** 40:100; 2/5 **8.** 82:100; 41/50 **9.** 66:100; 33/50 **10.** 75:100; 3/4 **11.** 112:100; 28/25

**DP57** Teacher creates answer key.

**DP58** **A.1.** 3/6 **2.** 11/44 **3.** 80/100 **4.** 35/73 **5.** 41/100 **6.** 6/100 **B. C. D.** (Answers will vary.)

## Unit 8: Proportions

**Page 63 Unit Review** **1.a.** 2/4 = 3/6 **b.** 8/12 = 2/3 **c.** 25/30 = 5/6 **d.** 22/56 = 11/28 **e.** 8/9 = 32/36 **2.a.** yes **b.** no **c.** yes **d.** yes **e.** no **f.** yes **3.a.** 5/10 = 50/100 **b.** 1/2 = 50/100 **c.** 3/4 = 75/100 **d.** 15/20 = 75/100 **e.** 25/100 = 25/100 **f.** 1/4 = 25/100 **4.a.** 1/4 **b.** 4/5 **c.** 1/3 **d.** 1/7 **e.** 4/9 **f.** 1/2 **5.a.** proportion **b.** cross product **c.** equivalent ratios **Bonus Work 1.** (college) 110/200 = 55/100 (work) 46/200 = 23/100 (military) 12/200 = 6/100 (not sure) 32/200 = 16/100

**DP59** **A.1.** c **2.** a **3.** b **4.** b **B.** (Cross products or reduced ratios should be the same) **C.1.** 50/100 = 2/4 **2.** 25/100 = 3/12 **3.** 75/100 = 15/20 **4.** 30/100 = 3/10

**DP60** Teacher creates answer key.

**DP61** 1. T 2. F 3. T 4. F 5. T 6. F 7. F 8. F 9. F 10. T 11. F 12. T 13. F 14. F 15. F

**DP62** 1. 17/20 = 85/100 2. 12/20 = 60/100 3. 10/20 = 50/100 4. 16/20 = 80/100 5. 15/20 = 75/100 6. 13/20 = 65/100 7. 8/20 = 40/100 8. 18/20 = 90/100 9. 6/20 = 30/100 10. 14/20 = 70/100 11. 11/20 = 55/100 12. 20/20 = 100/100 13. 19/20 = 95/100 14. 13/20 = 65/100 15. 4/20 = 20/100 16. 7/20 = 35/100 17. 9/20 = 45/100 18. 5/20 = 25/100

**DP63** 1. 45/100 = 189/420 2. 40/100 = 128/320 3. 60/100 = 3/5 4. 10/100 = 34/340 5. 8/100 = 4/50 6. 50/100 = 110/220 7. 10/100 = 3/30 8. 140/100 = 78400/56,000 9. 30/100 = 15/50 10. 75/100 = 45/60 11. 1/20 = 275/5,500 12. 35/100 = 700/2,000

**DP64** A.1. 6:8; 75:100 2. 6/8 = 75/100 3.a. 6 × 100 = 600; 8 × 75 = 600 b. 3/4 B.1. A proportion is a way of showing two equivalent ratios by writing them with an equal sign. 2. If the cross products are the same, the proportion is true. 3. If the reduced ratios are the same, the proportion is true. 4. Yes. The cross products are the same. (Or, the reduced ratios are the same.)

## Unit 9: Solving Percent Problems

**Page 66 Exercise** 1. 25 2. 30 3. 20 4. 20 5. 9 6. 30

**Page 67 Exercise** 1. 4 gallons 2. $35 3. 96 students 4. 72 votes 5. 93 miles 6. $20

**Page 68 Exercise** 1. 25% 2. 16% 3. 30% 4. 50% 5. 40% 6. 80%

**Page 69 Exercise** 1. $80 2. 500 miles 3. 80 pounds 4. $900 5. 300 people 6. $600

**Page 70 Unit Review** 1.a. $21 b. 36 gallons c. 31 miles d. 24 people e. 75% f. 80% g. 50% h. 75% i. $20 j. 210 persons k. 40 points l. $300 2.a. unknown term b. known term **Bonus Work** 3. (Paul) 75%; (Jose) 90%; (Meiling) 95%; (Hans) 85%; (Rose) 100%

**DP65** A.1. total 2. percent 3. part B.1. b 2. a 3. b C.1. $3 [(x/20 = 15/100) = (3/20 = 15/100)] 2. 50% [(40/280 = x/100) = (140/280 = 50/100)] 3. 1560 [(858/x = 55/100) = 858/1560 = 53/100)]

**DP66** A.1. b 2. c 3. a 4. b 5. c 6. a 7. a 8. c 9. b 10. a 11. c 12. b 13. a 14. c 15. b B.1.a. What percent is 6 of 30? b. *Example:* What percent is 6 students out of 30 students? 2.a. 8 is 25% of what total amount? b. (Answers will vary.) 3.a. What part is 50% of 36? b. (Answers will vary.) **Bonus** 1. 20 2. 32 3. 18

**DP67** Use this model to set up proportions that find the unknown part of a total: ***x/total = percent/100.*** See the first answer in each set for an example. **(Practice 1)** 1. 4 [(x/40 = 10/100) = (4/40 = 10/100)] 2. 6 3. 7.5 4. 11.5 5. 3 6. 12 7. 12.5 8. 31.25 9. 12 10. 19.2 11. 108 12. 75 **(Practice 2)** 1. 6 [(x/50 = 12/100) = (6/50 = 12/100)] 2. $10 3. 39 4. 7.2 5. 96 6. $50 7. $67.20 8. 24.3 9. 108 **(Practice 3)** 1. $27 [(x/99 = 30/100) = (27/90 = 30/100)] 2. $70.32 3. $33.75 4. $5.48 5. $5.64 6. $144 7. $.24 8. $46.20

**DP68 What's the Percent?** Use this model to set up proportions that find the unknown percent: ***part/total = x/100.*** See the first answer in each set for an example. **(Practice 1)** 1. 25% [(10/40 = x/100) = (10/40 = 25/100)] 2. 33.333 or 33.3% 3. 25% 4. 66.666 or 66.7% 5. 33.333 or 33.3% 6. 25% 7. 25% 8. 16.666 or 16.7% **(Practice 2)** 1. 80% [(4/5 = x/100) = (4/5 = 80/100)] 2. 60% 3. 75% 4. 50% 5. 20% 6. 60% 7. 25% 8. 75% **(Practice 3)** 1.a. 7% [(19.60/280 = x/100) = (19.60/280 = 7/100)] b. 15% c. 3% 2. All answers are rounded. a. 38.7% b. 19.4% c. 9.7% d. 4.8% e. 24.2% 3.a. 30% b. 29% c. 24% d. 17%

**DP69 What's the Total Amount?** Use this model to set up proportions that find the unknown total: ***part/x = percent/100.*** See the first answer in each set for an example. **(Practice 1)** 1. 20 [(3/x = 15/100) = (3/20 = 15/100)] 2. 60 3. 80 4. 12 5. 64 6. 90 7. 100 8. 80 9. 56 **(Practice 2)** 1. $40 [(4/x = 10/100) = (4/40 = 10/100)] 2. $60 3. $66.67 (rounded up) 4. $44 5. $106.67 (rounded up) 6. $500 **(Practice 3)** 1.a. 12 [(3/x = 25/100) = (3/12 = 25/100)] b. 18 c. 28 d. 40 2.a. $3 b. $15 c. $37.50 d. $52.50 3.a. $13.33 (rounded) b. $25 c. $33.33 (rounded) d. $40

**DP70** 1. $20 [(5/x = 25/100) = (5/20 = 25/100)] 2. 16.67% (rounded up) [(12/72 = x/100) = (12/72 = 16.67/100)] 3. 128 [(x/160 = 80/100) = (128/160 = 80/100)] 4. 3.33% (rounded) [(80/2400 = x/100) = (80/2400 = 3.33/100)] 5. 280 [(28/x = 10/100) = (28/280 = 10/100)] 6. $144 [(x/960 = 15/100) = (144/960 = 15/100)]

## Unit 10: Renaming Decimals and Percents

**Page 76 Exercise** 1. .25; 25% 2. .50; 50% 3. .75; 75% 4. .5; 50% 5. .9; 90% 6. .2; 20% 7. .8; 80% 8. .002; .2% 9. .052; 5.2% 10. .123; 12.3%

**Page 77 Exercise** 1. .4; 40% 2. .67; 67% 3. .25; 25% 4. .5; 50% 5. .125; 12.5% 6. .6; 60% 7. .15; 15% 8. .71; 71%

**Page 78 Exercise** 1.a. 12 3/10 b. 45 3/25 c. 1 1/4 d. 2 17/20 2.a. 3.8; 380% b. 5.33; 533% c. 9.5; 950% d. 3.3; 330%

**Page 79 Unit Review** 1.a. .75 b. .625 c. .2 d. about .666 or .67 or .7 e. .16 f. .04 g. .12 h. .0062 2.a. 1/20 b. 5/8 c. 4/5 d. 1 1/2 e. 1/2 f. 22/25 g. 3/20 h. 1/25 3.a. 3% b. 60% c. 81% d. 4.5% e. 90% f. 48% g. 25% h. 87.5% 4.a. 2 1/2 b. 3 3/4 c. 8 1/10 d. 4 31/50 e. 1 1/20 f. 3 3/10 g. 2 3/25 h. 1 43/50 5.a. 2.6; 260% b. 5.25; 525% c. 3.625; 362.5% d. 4.75; 475% e. 7.5; 750% f. 6.3; 630% 6.a. numeral b. simplify c. powers of 10 d. equivalents **Bonus Work** 1.a. 1/5; .2; 20% b. 1/2; .5; 50% c. 7/10; .7; 70% d. 9/20; .45; 45% e. 4/25; .16; 16% f. 2/25; .08; 8% g. 2/3; about .666; 66.6% h. 16/25; .64; 64% i. 100/100; 1.00; 100%

**DP71** 1. 11/20 2. .25 3. 60% 4. .93 5. 1/5 6. 60% 7. 4.2 8. 1 3/4 9. 350% 10. 460% 11. 1 1/2 12. 2.1

**DP72** **A.1.** 3/4 **2.** 14/25 **3.** 9/10 **4.** 17/25 **5.** 1/50 **6.** 3/50 **7.** 19/50 **8.** 71/100 **B.1.** 9/100 **2.** 3/100 **3.** 1/25 **4.** 3/20 **5.** 23/50 **6.** 23/100 **C.1.** 1/5 **2.** 4/5 **3.** 1/4 **4.** 1/10 **Bonus 1.** $1.50 **2.** 24 problems **3.** $62.50 **4.** $12.50

**DP73** **A.2.** a **3.** b **4.** d **5.** h **6.** g **7.** f **8.** e **9.** i **10.** k **11.** l **12.** j **B.1.** 2/5 **2.** 4/5 **3.** 3/10 **4.** 3/50 **5.** 21/500 **6.** 41/50 **7.** 9/20 **8.** 113/500 **9.** 113/500 **10.** 9/50 **C.1.a.** 1/2 **2.a.** 3/10 **3.a.** 89/100 **4.a.** 3/4 **b.** 9/20 **5.a.** 1/5 **b.** 3/4 **Bonus 1.** $12.50 **2.** .6 **3.** $8.01 **4.** $.30 **5.** .95

**DP74** **A.2.** 20% **3.** 22% **4.** 8.5% **5.** 10% **6.** 6.2% **B.1.** 66.7% **2.** 9.9% **3.** 75% **4.** .3% **5.** 7.3% **6.** 70% **7.** 84.7% **8.** 5% **9.** 20% **C.1.a.** 50% **b.** 3% **c.** 45% **d.** 2% **2.a.** 48.7% **b.** 40.7% **c.** 38.2% **Bonus 1.** It has the same amount of juice (50%) and water (50%). **2.** .080 or 8%

**DP75** **A.1.** .53 **2.** .25 **3.** .02 **4.** .085 **5.** .999 **6.** .255 **7.** .33 **8.** .15 **9.** .49 **B.1.** .12 **2.** .06 **3.** .09 **4.** .202 **5.** .151 **6.** .0075 **7.** 1.85 **C.1.a.** .60 **b.** .72 **c.** .91 **d.** .85 **2.a.** .05 **b.** .155 **c.** .305 **d.** .24 **Bonus 1.a.** 30 **b.** 36 **c.** 45.5 **d.** 42.5 **2.** 25%

**DP76** **A.1.** .8 **2.** .3 **3.** .05 **4.** .07 **5.** .127 **6.** .008 **7.** .14 **B.1.** .6 **2.** .222 **3.** .875 **4.** .375 **5.** .8 **6.** .636 **7.** .45 **8.** .733 **C.1.** .31 **2.** .67 **3.** .38 **4.** .35 **5.** .73 **6.** .14 **7.** .89 **8.** .6 **D.1.** .17 **2.a.** .60 **b.** .25 **c.** .15 **Bonus 1.** $1.46 **2.** 35% more than Merry; 45% more than Lars

**DP77** **A.1.** 23% **2.** 10% **3.** 1% **4.** 87% **5.** 30% **6.** 14.8% **7.** 25% **8.** 1.2% **B.1.** 25% **2.** 45% **3.** 60% **4.** 83.33% **5.** 37.5% **6.** 66.67% **7.** 31.25% **8.** 57.14% **C.1.** 50% **2.** 80% **3.** 33.33% **4.** 62.5% **5.** 58.33% **6.** 5% **7.** 44.44% **8.** 18.75% **D.1.a.** 33.3% false answers **2.a.** 50% of his time is spent typing **b.** 25% is spent filing **c.** 25% on the phone **Bonus 1.** 6 **2.a.** 16 **b.** 8 **c.** 8

**DP78** **A.1.** 2 1/8 **2.** 1 47/250 **3.** 5 7/10 **4.** 1 9/20 **5.** 10 2/25 **6.** 3 3/5 **7.** 8 111/500 **8.** 6 1/20 **9.** 11 3/10 **10.** 20 1/20 **B.1.** 1 1/10 **2.** 3 1/2 **3.** 1 1/100 **4.** 2 3/4 **5.** 1 11/50 **6.** 5 13/100 **7.** 3 43/50 **8.** 4 8/25 **9.** 10 **10.** 13 1/2 **C.1.** 2.6 **2.** 1.5 **3.** 3.13 **4.** 5.67 **5.** 4.31 **6.** 7.33 **7.** 9.42 **8.** 8.33 **D.1.** 150% **2.** 337.5% **3.** 580% **4.** 725% **5.** 242.9% **6.** 870% **7.** 118.8% **8.** 255.6% **9.** 1023.5%

**DP79** **A.1.a.** 1/2 **b.** .5 **c.** 50% **2.a.** 5/6 **b.** .833 **c.** 83.3% **3.a.** 5/8 **b.** .625 **c.** 62.5% **4.a.** 7/10 **b.** .7 **c.** 70% **5.a.** 2/5 **b.** .4 **c.** 40% **6.a.** 2/3 **b.** .667 **c.** 66.7% **B.1.** 3/5; .6; 60% **2.** 7/8; .875; 87.5% **3.** 7/50; .14; 14% **4.** 3/500; .006; .6% **5.** 1/9; .111; 11.1% **6.** 3 1/4; 3.25; 325% **7.** 3 5/23; 3.217; 321.7% **8.** 10 14/25; 10.56; 1056%

**DP80** **A.1.** 7.95 **2.** .272 **3.** .28 **4.** 2.04 **5.** 1.5 **6.** .0778 **7.** .3 **8.** 20.03 **9.** 25.7 **10.** 2.412 **11.** 1.57 **12.** 50.2 **B.1.** 2.8 **2.** 48 **3.** 9.09% **4.** 23.08% **5.** $10.06 **6.** 160 **7.** 42.86% **8.** 360 **9.** $25.20 **C.1.a.** 42.86% **b.** 65% **c.** 6% **d.** 90% **2.a.** .08 **b.** .69 **c.** .32 **d.** .035 **3.a.** 3/20 **b.** 3/4 **c.** 13/40 **d.** 3/10 **4.a.** 1 7/25 **b.** 7 2/25 **c.** 9 49/50 **d.** 3 7/10 **5.a.** 2.33 **b.** 1.89 **c.** 3.33 **d.** 5.4 **6.a.** 450% **b.** 350% **c.** 904% **d.** 667%

# Reaching and Teaching Students with Special-Needs

by Katherine D. Perez, Ed.D.
Director of Special Education and Reading Leadership Programs, St. Mary's College, Moraga, California

## Special Students Have Special Needs

Getting the benefits of a math program may be difficult for your low-achieving students. Their special characteristics and learning problems can frustrate and discourage them. Understanding what makes those students tick can help you find ways to reach them.

### Academic Needs

Special-needs students have difficulty processing information, and that affects the way they receive, store, use, and express information. Their attention span is short. Their performance may vary—they know something one day, only to forget it the next.

Reading is a major stumbling block for many students. They often can't read on-level texts and they have difficulty completing assignments. Students with weak listening skills find lecture presentations difficult.

### Behavior Needs

Special-needs students often have behavior characteristics that create problems for them. They may be overactive or inactive, impulsive or listless. Some may be in constant motion and have difficulty focusing on tasks. Some may have poor study skills or be unable to work independently.

### Social Needs

Many special-needs students have experienced years of failure in school and in the community. They need to experience success and feel good about themselves.

## Motivating Your Reluctant Learners

Math can be fun and meaningful for your students when they can connect their learning with the problems they will solve in real life. Reinforce their learning by building activities around real-life math problems. Have students work with math materials (such as store catalogs, ads, and bank forms) as often as possible.

Special-needs students learn in different ways. Some learn kinesthetically, some by visual example, and some by listening. Vary your teaching techniques. Adapt lessons so students can discover and learn in their own best ways.

Organize the class period to include time for both individual and group work. Use the buddy system and pair students so the non-reader can be with a reading partner. Assign hands-on activities as well as independent seat work during class time.

### Facilitate Learning

You may find these techniques helpful:

- Teach at an even pace; be aware of your students' limits, increasing the amounts of their learning gradually.
- Stay with a topic until students understand.
- Break concepts and skills down into small steps, and teach those steps one at a time.
- Check frequently to see if students understand.
- Repeat and reinforce a concept in different ways; give students plenty of time for practice.
- Explain assignments and discuss and show all materials needed to do them. Ask questions to make sure students are following you.
- Immediately explain terms students don't understand so that they can get on with their work.
- Keep your explanations *simple* and use language your students understand.
- Give instructions both orally and in writing.
- Walk students through multi-step tasks.
- Give students plenty of time to think about and apply what is being taught.
- Show students how to remember things.
- Stress cooperation, not competition.

### Positive Reinforcement

Whatever strategies you use, keep in mind that simple, clear explanations and positive feedback get your special-needs students involved in their own learning. These students need evidence that they *can* learn, so always *tell* them what they are learning and *show* them what they learned. Encourage students to keep their own records of achievement that show their accomplishments and successes. Urge them to teach what they learn to others. Congratulate them publicly often, and give them awards of excellence for *all* successes, small and large.

Special students do have special needs. With your help, your students can successfully solve math problems in class, as well as in real life.

☆ AWARD OF EXCELLENCE ☆

*presented to*

# Congratulations!

*You have successfully accomplished one or more of these important goals:*

☐ Learned this skill:

_____

_____

☐ Finished this task:

_____

_____

☐ Taught this skill to another person:

_____

_____

***Signed:*** _____

_____

***Date:*** _____

**Decimals and Percents**

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# Decimals and Percents

## Student's Record of Achievement

| Unit | Lesson Title | Page | Skill Learned | Mark | Date |
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# Unit 1: Decimals Are Part of Our Lives

**A.** Put an **X** next to each number that's a decimal.

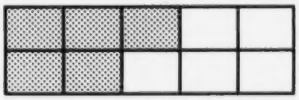
_____ **1.** 6.0 _____ **5.** $\frac{3}{4}$

_____ **2.** .3 _____ **6.** 45.000

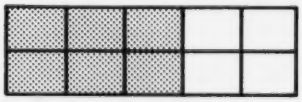
_____ **3.** 3.58 _____ **7.** $1\frac{2}{3}$

_____ **4.** .353 _____ **8.** 17

**B.** Look at the shaded parts in these shapes. Write the decimal fraction that shows the shaded amounts.

**1.** 

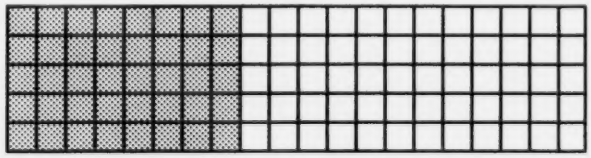
_____ shaded parts

**2.** 

_____ shaded parts

**3.**

_____ shaded parts

**4.** 

_____ shaded parts

**C.** Look at the digit that is underlined in each number. What is the value of the digit? Put an **X** next to its value.

**1.** .6̲6 _____ **a.** one

_____ **b.** tenth

**2.** 6̲.2 _____ **a.** one

_____ **b.** tenth

**3.** 8.1̲6 _____ **a.** hundredth

_____ **b.** tenth

**4.** 11.01̲6 _____ **a.** thousandth

_____ **b.** hundredth

**5.** 0.6̲04 _____ **a.** tenth

_____ **b.** ten

**D.** Read these sentences. Write the amounts in decimals.

**1.** Jones City had *eight-tenths* inches of rain yesterday.

_____ inches

**2.** Sandy buys meat that weighs *one and 15 hundredths pounds.*

_____ pounds

**3.** Tommy put *thirteen* gallons of gas in his car.

_____ gallons

**4.** The Andinos pay *six hundred* dollars and *thirty* cents for rent.

$_____

**Score:**

_____ no. right

_____ no. wrong

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# Decimals Everywhere!

## What Kind of Amount?

Read these sentences. What kinds of amounts do the decimals show? Write *part, whole,* or *mixed* (a whole and a part).

1. Gas costs $1.19 per gallon.

   _____

2. Bill needs nails that are .25 millimeters long.

   _____

3. Janis had a fever of 101.3 degrees.

   _____

4. JoJo's batting average is .345.

   _____

5. One serving of Brand Z cereal has .17 milligrams of vitamin $B_1$.

   _____

6. Gail buys silk fabric at $4 per yard.

   _____

7. Romy jumped 5.8 meters in the jump event at the track meet.

   _____

8. Davis ran in the 8.5 kilometer race.

   _____

9. The phone company charges $.15 per minute for Zone 1 calls.

   _____

## Finding Decimal Amounts

Here are some places where decimals are used in real life. Look for these places around your home, in school or in your neighborhood. Then write the decimal amount that you see, and tell what kind of amount it shows. Write *part, whole,* or *mixed.*

1. a food label
   a. amount _____
   b. kind of amount _____
2. a price tag
   a. amount _____
   b. kind of amount _____
3. a store ad
   a. amount _____
   b. kind of amount _____
4. a checking or savings account
   a. amount _____
   b. kind of amount _____
5. a gas pump
   a. amount _____
   b. kind of amount _____
6. the final times of a sports event such as a swim or track meet
   a. amount _____
   b. kind of amount _____

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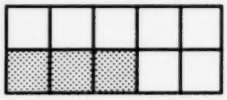
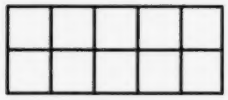
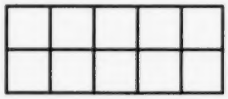
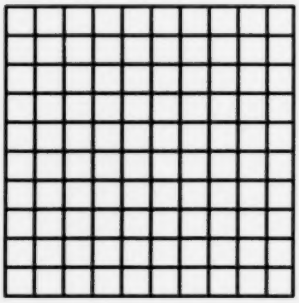
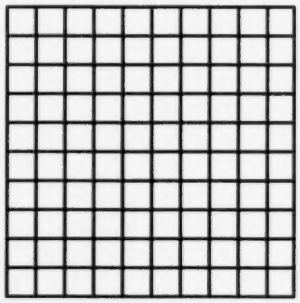
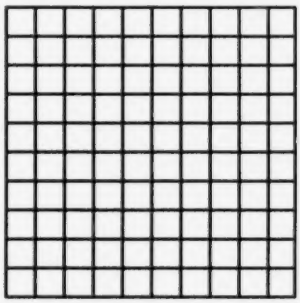
# How Many Parts?

**A.** How many equal parts are these decimals part of?
Put an **X** next to the correct answer.

| | | |
|---|---|---|
| **1.** .2 mile<br>_____ **a.** 10 parts<br>_____ **b.** 100 parts<br>_____ **c.** 2 parts | **2.** .76 meter<br>_____ **a.** 76 parts<br>_____ **b.** 10 parts<br>_____ **c.** 100 parts | **3.** $.56<br>_____ **a.** 100 parts<br>_____ **b.** 50 parts<br>_____ **c.** 56 parts |
| **4.** .45 pound<br>_____ **a.** 150 parts<br>_____ **b.** 100 parts<br>_____ **c.** 45 parts | **5.** .111 millimeter<br>_____ **a.** 100 parts<br>_____ **b.** 1,000 parts<br>_____ **c.** 10 parts | **6.** .08 ounce<br>_____ **a.** 8 parts<br>_____ **b.** 10 parts<br>_____ **c.** 100 parts |
| **7.** .75 hour<br>_____ **a.** 100 parts<br>_____ **b.** 60 parts<br>_____ **c.** 75 parts | **8.** $.05<br>_____ **a.** 5 parts<br>_____ **b.** 100 parts<br>_____ **c.** 10 parts | **9.** .989 gallon<br>_____ **a.** 1,000 parts<br>_____ **b.** 900 parts<br>_____ **c.** 100 parts |

**B.** These shapes are divided into 10 or 100 equal parts. Shade some of the parts. Write the decimal fraction that shows the parts that are shaded. And write the decimal fraction that shows the parts that are not shaded. (One is done.)

| | | |
|---|---|---|
| **1.**  <br>.3 shaded .7 not shaded | **2.**  <br>___ shaded ___ not shaded | **3.**  <br>___ shaded ___ not shaded |
| **4.**  <br>___ shaded ___ not shaded | **5.**  <br>___ shaded ___ not shaded | **6.**  <br>___ shaded ___ not shaded |

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# Every Place Has a Value

Look at the number. Then answer the questions about that number.

1. _____

   a. How many places is _____ from the decimal point? _____

   b. Is this place to the left or right of the decimal point? _____

   c. What is the value of that digit?

   _____

2. _____

   a. How many places is _____ from the decimal point? _____

   b. Is this place to the left or right of the decimal point? _____

   c. What is the value of that digit?

   _____

3. _____

   a. How many places is _____ from the decimal point? _____

   b. Is this place to the left or right of the decimal point? _____

   c. What is the value of that digit?

   _____

4. _____

   a. How many places is _____ from the decimal point? _____

   b. Is this place to the left or right of the decimal point? _____

   c. What is the value of that digit?

   _____

5. _____

   a. How many places is _____ from the decimal point? _____

   b. Is this place to the left or right of the decimal point? _____

   c. What is the value of that digit?

   _____

6. _____

   a. How many places is _____ from the decimal point? _____

   b. Is this place to the left or right of the decimal point? _____

   c. What is the value of that digit?

   _____

**Bonus:** Make a poster of a place value chart that shows values for six whole number places and six decimal places.

Note to the teacher: Write in your own numbers and a digit in question a. for each problem.

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Subject: _____ Name: _____

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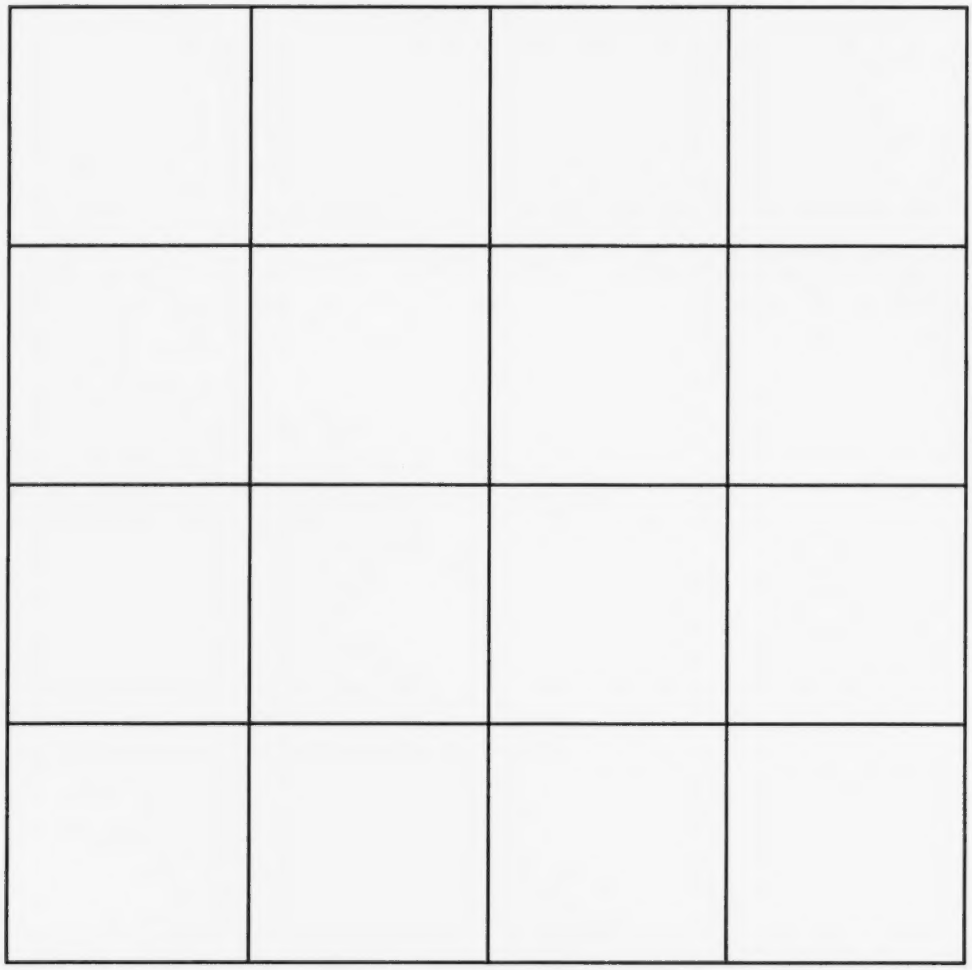
# Four in a Line

***A game for two players***



**Materials:** two sets of 8 markers,
two pencils

**Instructions:**

1. Each player chooses eight squares and writes eight numbers that are

   _____.

2. First player chooses a number that he did not write. He says that number aloud. If he says it correctly, he covers the number with a marker.
3. The other player takes his turn. He also chooses a number he did not write and says it aloud. He covers the number with a marker if he says it correctly.
4. Both players may now choose any number when it's their turn. The first player to cover four numbers in a straight line—up and down, across, or diagonally, wins.

Note to the teacher: Write in kinds of numbers—tenths, hundredths, decimal fractions, whole numbers and mixed decimals, etc.

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Reading and writing decimals/***Decimals and Percents,*** Unit 1, pp. 10–13.

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Subject: _____ Name: _____

Period: _____ Date: _____

# Unit 1: Decimal Check

**A.** Draw a circle around the numbers that show each kind of amount.

**1.** a whole amount

| | | | |
|---|---|---|---|
| 4 | 2.5 | 13.000 | .102 |
| 67.08 | .890 | 77,643.00 | |

**2.** a part of a whole amount

| | | | |
|---|---|---|---|
| 0.6 | .34 | 1.25 | .405 |
| .00708 | 67.00 | .1 | 87.08 |

**3.** a mixed amount (a whole and a part)

| | | | |
|---|---|---|---|
| .09 | 4.6 | 1.008 | 438.5096 |
| 5.009 | .1121 | 8.000 | 0.989 |

**B.** What's the value of each decimal place? (One is done as an example.)

**1.** 3.682 **a.** 6 tenths

**b.** _____

**c.** _____

**2.** 23.45 **a.** _____

**b.** _____

**3.** 9.017 **a.** _____

**b.** _____

**c.** _____

**4.** 125.403 **a.** _____

**b.** _____

**c.** _____

**C.** Write two numbers that have these values. Circle the digit that has the place value.

**1.** Hundredths

**a.** _____ **b.** _____

**2.** Tens

**a.** _____ **b.** _____

**3.** Thousandths

**a.** _____ **b.** _____

**4.** Tenths

**a.** _____ **b.** _____

**5.** Hundreds

**a.** _____ **b.** _____

**D.** Read these amounts. Then write the numbers that show the amounts.

**1.** Twelve dollars and $\frac{89}{100}$

_____

**2.** Three dollars and no cents

_____

**3.** One hundred and one dollars and sixty-eight cents

_____

**4.** One dollar and $\frac{7}{100}$

_____

**5.** 89 cents

_____

**6.** Two hundred fifty-nine dollars and twelve cents

_____

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Subject: _____ Name: _____

Period: _____ Date: _____

# Unit 2: Comparing Decimals

**A.** Look at each pair of decimals. Are the decimals alike or unlike? Write **A** if they are alike. Write **U** if they are not alike.

1. .3 and .1 _____
2. .7 and .96 _____
3. 1.1 and 1.41 _____
4. 2.72 and 12.73 _____
5. .006 and .077 _____
6. 77.71 and 87.3 _____

**B.** One decimal must be renamed in each pair of decimals. Rename that decimal. Then answer the questions about the renamed decimals. (One is done.)

1. .43 and .50
   Why is .5 renamed as hundredths?
   Because .43 has two decimal places.
2. 2.1 and .321
   Why is 2.1 renamed as thousandths?
3. 0.86 and .089
   Why is .86 renamed as thousandths?
4. 3.45 and 1.2
   Why is 1.2 renamed as hundredths?

**C.** Compare each pair of decimals. Write > in the box if the first decimal is larger than the second. Write < if the first decimal is smaller.

1. .21 ☐ .23
2. .302 ☐ .35
3. .033 ☐ .324
4. 5.21 ☐ 5.1
5. 10.053 ☐ 11.062
6. 0.1 ☐ 0.001

**D.** Put these decimals in order from smallest to largest.

1. .3 in., .2 in., .9 in.
   _____ < _____ < _____
2. .72 ft., .60 ft., .37 ft.
   _____ < _____ < _____
3. .077 cm., .079 cm., .006 cm.
   _____ < _____ < _____
4. .53 pt., .6 pt., .527 pt.
   _____ < _____ < _____
5. 1.2 sec., 2.02 sec., 2.216 sec.
   _____ < _____ < _____
6. 8.52 km., 8.5 km., 8.521 km.
   _____ < _____ < _____
7. .09 gal., 1.9 gal., .9 gal.
   _____ < _____ < _____

**Score:**

_____ no. right

_____ no. wrong

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Subject: _____ Name: _____

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# Like and Unlike Decimals

Answer the questions about the decimals and mixed decimals.

1. _____ _____

   a. Are they like or unlike decimals?

   _____

   b. Why is that?

   _____

   _____

2. _____ _____

   a. Are they like or unlike decimals?

   _____

   b. Why is that?

   _____

   _____

3. _____ _____

   a. Are they like or unlike decimals?

   _____

   b. Why is that?

   _____

   _____

4. _____ _____

   a. Are they like or unlike decimals?

   _____

   b. Why is that?

   _____

   _____

5. _____ _____

   a. Are they like or unlike decimals?

   _____

   b. Why is that?

   _____

   _____

6. _____ _____

   a. Are they like or unlike decimals?

   _____

   b. Why is that?

   _____

   _____

7. _____ _____

   a. Are they like or unlike decimals?

   _____

   b. Why is that?

   _____

   _____

8. _____ _____

   a. Are they like or unlike decimals?

   _____

   b. Why is that?

   _____

   _____

Note to the teacher: Write in or dictate pairs of like and unlike decimals and mixed decimals.

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Subject: _____ Name: _____

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# How Many Decimal Places?

**A.** Rename each group of decimals so that they are alike. The first is done.

1. .5 inches .72 inches .6 inches

   .50 .72 .60

2. .921 feet .6 feet .37 feet

3. 6 miles 2.14 miles 8.2 miles

4. .123 cm. .7 cm. .64 cm.

5. 9.02 quarts 6.4 quarts 3.777 quarts

6. 18.03 km 26.34 km 12.9 km

7. .08 seconds 1.1 seconds 1.3 seconds

8. 4.33 yards 4.3 yards 4.039 yards

9. 1.22 miles .7 miles .2 miles

10. .75 grams .0338 grams .583 grams

11. .001 mm .1 mm .1012 mm

**B.** Look at each group of numbers. Some decimals are renamed incorrectly. Put an **X** through those decimals. Then rename them correctly. (One is done.)

1. Rename as hundredths:

   ~~.200~~ .60 .14

   .20

2. Rename as thousandths:

   .42 .750 .677

3. Rename as thousandths:

   5.20 1.227 0.010

4. Rename as tenths:

   2.1 2.00 3.0

5. Rename as thousandths:

   9.020 7.124 8.3000

6. Rename as hundredths:

   .21 .03 .400

7. Rename as ten thousandths:

   .3000 .72700 .9883

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Subject: _____ Name: _____

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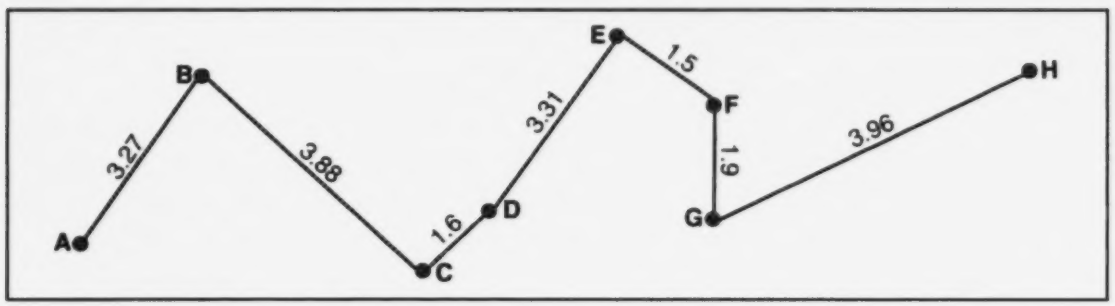
# Larger or Smaller?

**A.** Rename the unlike decimal in each pair of decimals so that you can compare them. Then write > (larger than) or < (smaller than) between the decimals. (The first is done.)

| Practice 1 | | | Practice 2 | | | Practice 3 | |
|---|---|---|---|---|---|---|---|
| 1. .31 | > | .30 | 1. 1.15 | 1.2 | 1. 4.1 | 3.96 |
| 2. .66 | | .686 | 2. 4.87 | 4.8 | 2. 1.907 | .98 |
| 3. 0.5 | | 0.49 | 3. 3.563 | 3.08 | 3. 3.0 | 4.33 |
| 4. .012 | | .9 | 4. 3.7 | 3.701 | 4. 21.939 | 20.09 |
| 5. .29 | | .083 | 5. 4.2 | 4.19 | 5. .9677 | 9.6 |
| 6. 0.3 | | 0.313 | 6. 1.008 | 1.2234 | 6. 11.12 | 12.983 |
| 7. .888 | | .4 | 7. 4.38 | 4.10203 | 7. 2.4189 | 24.18 |
| 8. .05 | | .0077 | 8. 100.124 | 100.09 | 8. 0.9978 | 9.01 |

**B.** This map shows the distance in miles between stops along a road. In the problems, write the distances. Then compare them. Write < or > between the distances. (One is done.)




1. A to B and B to C 3.27 < 3.88
2. A to B and D to E _____
3. A to B and G to H _____
4. B to C and G to H _____
5. D to E and G to H _____
6. C to D and E to F _____
7. E to F and F to G _____
8. F to G and C to D _____

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Subject: _____ Name: _____

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# Put Them in Order

**A.** Rename the decimals in each group so that they are alike. Then put the decimals in order from smallest to largest. (One is done.)

1. .72 .8 .731

   .720 < .731 < .800

2. .66 .723 .664

   _____ < _____ < _____

3. 1.74 1.47 .4

   _____ < _____ < _____

4. 3.405 3.041 3.4

   _____ < _____ < _____

5. 38.22 38.2 38.23

   _____ < _____ < _____

6. 3.4 2.324 3.42

   _____ < _____ < _____

7. .6 .66 1.06

   _____ < _____ < _____

8. 100.3 10.03 100.272

   _____ < _____ < _____

9. 3.5 5.123 4

   _____ < _____ < _____

**Bonus:**
On a sheet of paper, write five groups of unlike decimals. Then give the numbers to a classmate to put in order from largest to smallest.

**B.** Here are some winning times from a swim meet. *The lowest number in each event is the fastest time.* Put the times in order from fastest to slowest. Write **1** for the fastest time, **2** for the second fastest, and **3** for the slowest time. (The first problem is started.)

1.

| Boys 100-meter freestyle | |
|---|---|
| **Swimmer** | **Time** |
| Jack | 57.12 seconds |
| Jose | 57.3 seconds |
| Aldo | 56.93 seconds |

2.

| Boys 100-meter backstroke | |
|---|---|
| **Swimmer** | **Time** |
| Robert | 58.62 seconds |
| Paul | 58.7 seconds |
| Ray | 59.69 seconds |

3.

| Girls 100-meter freestyle | |
|---|---|
| **Swimmer** | **Time** |
| Carmen | 58.6 seconds |
| Pokey | 56.82 seconds |
| Olga | 59.02 seconds |

4.

| Girls 100-meter backstroke | |
|---|---|
| **Swimmer** | **Time** |
| Mona | 59.47 seconds |
| Chue | 59.72 seconds |
| Sandy | 59.43 seconds |

**Answers**

1. _____
2. _____
3. 1
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____

**Bonus:**
Who had the best time of all in the swim meet?

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# Unit 2: Decimal Check

**A.** Rename the unlike decimals in each group. Then put the decimals in order from largest to smallest.

1. .72 .388 .517

   _____ > _____ > _____

2. .896 1.01 3.3

   _____ > _____ > _____

3. 9.027 9.29 9.22

   _____ > _____ > _____

4. .4 .04 .044

   _____ > _____ > _____

5. 22.78 21.999 23.1

   _____ > _____ > _____

**B.** Are these decimals put in order correctly from smallest to largest? If they are, write *correct* on the line. If they aren't, put them in the right order.

1. $3.52 < 3.59 < 3.7 < 35.7$

   _____

2. $.5 < .72 < .873 < .199$

   _____

3. $12.1 < 12.23 < 2.3 < 12.3$

   _____

4. $.01 < .02 < .1 < .2$

   _____

5. $5.5 < 6.4 < 6.47 < 7.1$

   _____

6. $.012 < .02 < .019 < .03$

   _____

7. $1.3 < 1.45 < 2.542 < 2.12$

   _____

8. $12.09 < 12.003 < 12.12 < 12.803$

   _____

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Subject: _____ Name: _____

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# Unit 3: Adding and Subtracting Decimals

**A.** Look carefully at these problems. Why can't you add or subtract them yet?

$$\begin{array}{r} 42.28 \\ +\,103.5 \\ \hline \end{array}$$

**1.** _____

_____

$$\begin{array}{r} .370 \\ -\ .138 \\ \hline \end{array}$$

**2.** _____

_____

$$\begin{array}{r} 12 \\ 6.2 \\ +\ .97 \\ \hline \end{array}$$

**3.** _____

_____

$$\begin{array}{r} 2.4 \\ -\ .87 \\ \hline \end{array}$$

**4.** _____

_____

---

**B.** Add these problems. Show all your work on this page.

**1.** .32 + .10 + .18

**2.** $.35 + $7.04

**3.** 3 + 1.53

**4.** 12 + 6.2 + .97

**5.** Sylvester has $13.55 in his checking account. He deposits $57.63 in it. How much does he now have in his account?

**C.** Subtract these problems. Show all your work.

**1.** .37 − .13

**2.** 12.7 − 1.92

**3.** 1.56 − .075

**4.** 4 − 2.2

**5.** Jo's dog weighs 58.6 pounds. The dog weighed 42 pounds six months ago. How many pounds has the dog gained?

**Score:**

_____ no. right

_____ no. wrong

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# Are They Lined Up?

Write these numbers so that the decimal places and decimal points are lined up correctly.

**Practice 1**

1. .1 .2
2. .6 .7
3. .5 .9 .8 .3
4. .2 .4 .1 .7
5. .2 .9 .7 .8 .1
6. .3 .1 .6 .5 .4 .3

---

**Practice 2**

1. .17 .23
2. .08 .11 .14
3. .45 .20 .35
4. .29 .72 .33 .19
5. .87 .66 .12 .02
6. .99 .49 .09 .19

---

**Practice 3**

1. 1.8 2.3 4.5
2. 13.5 3.6 8.9 1.1
3. 22.58 1.04 13.55
4. .08 1.32 1.23 1.72
5. 3.183 .089 4.539
6. 14.222 3.202 5.332 6.112

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# Lining Up Addition Problems

Finish writing these addition problems. Each problem has one or more letters. The letters match up to numbers on the chart. Use those numbers to complete the problems. Write the number above the letter in a problem.

Then write the addition problems so that they can be easily added. Line up the numbers in columns and rename unlike decimals. (One is done.)

**Number Chart**

| A | B | C | D | E |
|---|---|---|---|---|
| | | .5 | | |

| F | G | H | I | J |
|---|---|---|---|---|
| | | | | |

**1.** 1.46 + **C**

```
 1.46
+ .50
------
```

**2.** 246.7 + **E** + **H**

**3.** .7 + **B**

**4.** .85 + 1 + **I**

**5.** 4.06 + .896 + **I**

**6.** 12.38 + **B**

**7.** 5.192 + **G** + **D**

**8.** .589 + **E**

**9.** 20.06 + **B** + **E**

**10.** 6.5 + **C**

**11.** 12.38 + **A**

**12.** .09 + 1.2 + **F**

**13.** 42.11 + **C**

**14.** **A** + **D** + 2.15

**15.** 3.008 + .03 + **H** + **G**

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Note to the teacher: Write numbers in the chart each time this sheet is used. You may also want to write additional letters to the problems.

**Bonus:** Do the math.

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Setting up addition problems/***Decimals and Percents,*** Unit 3, pp. 22–24.

Subject: _____ Name: _____

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# Before You Subtract

Get these problems ready so that they can be subtracted. Line up the numbers in columns and rename unlike decimals.

**1.** .1 –

**2.** .5 –

**3.** .67 –

**4.** .83 –

**5.** .29 –

**6.** .345 –

**7.** 1.009 –

**8.** 3.4 –

**9.** 14.86 –

**10.** 9.09 –

**11.** 22.18 –

**12.** 54.982 –

**13.** $8.00 –

**14.** $35.99 –

**15.** $107.75 –

**Bonus:** Do the math.

Note to the teacher: Write or dictate different numbers each time you use this sheet.

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# Adding Decimal Amounts

Solve these addition problems. Show all your math work on another sheet of paper.

**Practice 1**

1. .1 + .4 =
2. .18 + .21 =
3. .798 + .201 =
4. .2 + .6 + .1 =
5. .67 + .10 + .22 =
6. 30.11 + 21.87 =
7. .112 + .235 + .301 + .241 =
8. 2.42 + 5.05 + 11.52 =
9. $1.00\dot{4}$ + .345 + 2.550 =

**Practice 2**

1. .25 + .3 + .1 =
2. .4 + 1.4 + 1.07 =
3. .234 + .23 + .115 =
4. 7.2 + 1.44 + 2.321 =
5. .2 + .01 + .45 + .233 =
6. 1.004 + .441 + 3.5 =
7. 14.33 + 30.4 + 132.12 =
8. 8.8 + 10.03 + .14 + 1.029 =
9. 18.28 + 3 + 1.6 + .105 =

**Practice 3**

1. .5 + .31 + .86 =
2. .86 + 1 + 2.3 =
3. .912 + .09 + .9 =
4. 1.8 + 2.88 + 3.8 + 4.888 =
5. .094 + 1.6 + 4.35 + .84 =
6. 13.1 + 9 + 3 + 2.58 + 4 =
7. 4.4 + 4.34 + 4.89 + 4.219 =
8. 123.8 + 37.22 + 18.55 =
9. 55.62 + 13.89 + 23.14 =

**Practice 4**

1. Goldie pays $16 for a shirt. She buys a pair of socks for $4.50. The tax on the two items is $1.33. How much does she spend altogether?

   **Answer:** _____

2. Jane is a waitress. In an hour, she got these tips: $.45, $1.05, $.75, $.50, $1, and $.83. How much is that in all?

   **Answer:** _____

3. Pete and his son are flying to Jackson. Pete's ticket costs $139.12. His son's ticket costs $69.56. What's the total amount that Pete pays?

   **Answer:** _____

4. Mrs. Patel has a money market fund of $7,478.23. The bank paid her interest of $91.70. How much is her fund now?

   **Answer:** _____

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# Subtraction Practice

Solve these subtraction problems. Show all your math work on another sheet of paper.

**Practice 1**

1. .8 − .3 =
2. .46 − .21 =
3. .98 − .74 =
4. .456 − .345 =
5. 3.9 − 2.7 =
6. 1.57 − .35 =
7. 14.28 − 3.05 =
8. 9.956 − 8.251 =
9. 12.9 − 2.5 =

---

**Practice 2**

1. .75 − .29 =
2. .5 − .31 =
3. .672 − .45 =
4. .385 − .19 =
5. .22 − .074 =
6. .5 − .362 =
7. .08 − .043 =
8. .13 − .004 =
9. .2 − .175 =

---

**Practice 3**

1. 12.9 − 3.23 =
2. 3.1 − .864 =
3. 4.05 − 2 =
4. 3.7 − 2.05 =
5. 6.8 − 1.27 =
6. 23.88 − 19.897 =
7. 19.35 − 14.7 =
8. 4 − 2.55 =
9. 1 − .079 =

---

**Practice 4**

1. Cleve buys a pair of sneakers. Its price is $29.81. The tax is $1.82. What is the total price for the sneakers?

   **Answer:** _____

2. Maureen has a balance of $474.36 in her bank account. She writes a check for $18.29. What is her new balance?

   **Answer:** _____

3. Rudy runs in a one-mile race. His time is 4 minutes. The winning time is 3.53 minutes. What is the difference between Rudy's and the winner's times?

   **Answer:** _____

4. Lynda is moving her refrigerator. Its width is .75 meter. The width of the space where she puts the refrigerator is .87 meter. How much room is there left?

   **Answer:** _____

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# Decimals at the Market

## What Are You Buying?

Get an ad for a grocery market. Look through the ad and pick items that you'd need. Write the names of the items and their prices below. Then add up those amounts.

1. Choose three items.

| Item | Price |
|---|---|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| **Total** | _____ |

2. Choose four items.

| Item | Price |
|---|---|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| **Total** | _____ |

3. Choose five items.

| Item | Price |
|---|---|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| **Total** | _____ |

## How Much Is Left?

Now figure out how much money you have left after you pay for your groceries. Show all your math work below.

1. Suppose you have $25 to pay for your groceries. How much money would you have left after you paid for
   a. number **1**?
      **Answer:** _____
      ***Math Work***

   b. number **3**?
      **Answer:** _____
      ***Math Work***

2. Suppose you have $38.33. How much would you have left after you paid
   a. for number **1**?
      **Answer:** _____
      ***Math Work***

   b. for number **2**?
      **Answer:** _____
      ***Math Work***

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Subject: _____ Name: _____

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# Unit 3: Decimal Check

**A.** All these problems have wrong answers. Look closely at each problem, and decide why it's wrong. Then rewrite each problem and solve it correctly.

***Math Work***

1. $\begin{array}{r} .22 \\ +3.1 \\ \hline .53 \end{array}$

2. $\begin{array}{r} .91 \\ -.147 \\ \hline .144 \end{array}$

3. $\begin{array}{r} 5.7 \\ -2.43 \\ \hline 2.14 \end{array}$

4. $\begin{array}{r} .4 \\ .2 \\ +.31 \\ \hline .37 \end{array}$

5. $\begin{array}{r} 1.89 \\ +3.015 \\ \hline 3.294 \end{array}$

6. $\begin{array}{r} 3.5 \\ -2.81 \\ \hline 1.71 \end{array}$

**B.** What number should be renamed before you add or subtract these problems? Circle that number. Then rename it. Write the renamed number on the line.

1. .643 + .76 _____
2. .2 + .405 _____
3. .7 − .52 _____
4. 1.483 + 2.1 _____
5. 27 + 14.23 _____
6. 18 − 9.498 _____

**C.** Make up addition and subtraction problems with these kinds of numbers. Then solve the problems.

1. like decimals
   **a.** add **b.** subtract

2. unlike decimals
   **a.** add **b.** subtract

3. whole numbers and mixed decimals
   **a.** add **b.** subtract

4. unlike mixed decimals
   **a.** add **b.** subtract

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Unit review/***Decimals and Percents,*** Unit 3, pp. 21–29.

Subject: _____ Name: _____

Period: _____ Date: _____

# Unit 4: Multiplying Decimals

**A.** How many decimal places will there be in the product? Circle that number.

1. 2.6 × 1.4 — Number of decimal places **0 1 2 3 4 5**

2. .086 × 1.2 — Number of decimal places **0 1 2 3 4 5**

3. .0178 × 3.5 — Number of decimal places **0 1 2 3 4 5**

4. .58 × .21 — Number of decimal places **0 1 2 3 4 5**

**B.** The decimal points in these products are wrong. Look at the problems, and explain what's wrong with the product.

3.81 × 4.4 = 1.6764

1. _____

_____

.037 × 5.5 = 2.035

2. _____

_____

6.6 × 2.33 = 1537.8

3. _____

_____

**C.** Check the math for these problems. Then finish writing the answers.

1. .79 × .008 = 632

2. .051 × .008 = 408

3. 0.02 × 3.7 = 74

4. .003 × 2.6 = 78

**D.** Read and solve these word problems. Round your answers to the nearest hundredth. Show all your work.

1. Mr. Lee buys a package of shrimp that weighs .74 pound. Shrimp costs $8.99 per pound. How much does he pay?

2. Mr. Brown estimates it will take 1.5 bags of seed to plant one acre of hay. How many bags does he need to plant 13 acres?

**Score:**

_____ no. right

_____ no. wrong

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Subject: _____ Name: _____

Period: _____ Date: _____

# Counting Decimal Places

**A.** Write the multiplication problems so that the factors are lined up. Then answer the question. (One is done.)

1. 6.7 × 4.2

$$\begin{array}{r} 6.7 \\ \times\ 4.2 \\ \hline \end{array}$$

Why would the product have two decimal places?

_____

2. 29.1 × 6

$$\begin{array}{r} \text{-----} \\ \times\ \text{----} \\ \hline \end{array}$$

Why would the product have one decimal place?

_____

3. 73.08 × 0.85

$$\begin{array}{r} \text{-----} \\ \times\ \text{----} \\ \hline \end{array}$$

Why would the product have four decimal places?

_____

4. .486 × 8.26

$$\begin{array}{r} \text{-----} \\ \times\ \text{----} \\ \hline \end{array}$$

Why would the product have five decimal places?

_____

**B.** How many decimal places would the product have in these problems?

1. .2 × .5 =

_____ decimal places

2. .35 × .4 =

_____ decimal places

3. 1.07 × .62 =

_____ decimal places

4. 8.5 × 3 =

_____ decimal places

5. 11.2 × 6.8 =

_____ decimal places

6. 0.04 × 26.8 =

_____ decimal places

7. 1.089 × .57 =

_____ decimal places

8. 3.12 × .438 =

_____ decimal places

9. 50.2 × 3.745 =

_____ decimal places

10. .087 × 5.04 =

_____ decimal places

**Bonus:** Use a calculator and multiply these problems. Copy the answers. Where are the decimal points in each answer?

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Subject: _____ Name: _____

Period: _____ Date: _____

# Pinpoint the Decimal Point

**A.** Put the decimal point correctly in the products.

1. 2.3 × 6 = 1 3 8
2. 46 × .3 = 1 3 8
3. .2 × 6.9 = 1 3 8
4. .3 × .46 = 1 3 8
5. .6 × 2.3 = 1 3 8
6. .3 × 68 = 2 0 4
7. 5.1 × .4 = 2 0 4
8. .4 × .51 × 2 0 4
9. 1.2 × 1.7 = 2 0 4
10. .17 × 1.2 = 2 0 4
11. .03 × 3.43 = 1 0 2 9
12. 1.47 × .7 = 1 0 2 9
13. 2.1 × .049 = 1 0 2 9
14. 7 × .0147 = 1 0 2 9
15. 343 × .03 = 1 0 2 9

---

**B.** Place the decimal point in the product.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **1.** | 21.7 | miles per gallon | **4.** | 10 | kilograms | **7.** | 13.78 | pound turkey |
| | × 3.5 | gallons | | × 2.5 | mg per kilogram | | × 21.5 | minutes per pound to roast |
| | 7595 | miles | | 250 | mg | | 296270 | minutes to roast |
| **2.** | 21.7 | miles per gallon | **5.** | 24.8 | kilograms | **8.** | 28.3 | pound turkey |
| | × 6.25 | gallons | | × 2.5 | mg per kilogram | | × 21.5 | minutes per pound to roast |
| | 135625 | miles | | 6200 | mg | | 60845 | minutes to roast |
| **3.** | 21.7 | miles per gallon | **6.** | 103.009 | kilograms | **9.** | 25.75 | pound turkey |
| | × .999 | gallons | | × 2.5 | mg per kilogram | | × 21.5 | minutes per pound to roast |
| | 216783 | miles | | 2575225 | mg | | 553625 | minutes to roast |

---

**Bonus:** On another sheet of paper, make up five multiplication problems that have factors with decimals and mixed decimals. (Or copy five problems from a math book.) Then show how many decimal places the product should have by writing an **X** in a decimal place. An example is shown at the right.

```
 1.2
x .3
----
.XX
```

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Subject: _____ Name: _____

Period: _____ Date: _____

# Decimal Products

Solve these multiplication problems. Rename products.

**Practice 1**

**a.** .2 × _____

**b.** .22 × _____

**c.** .222 × _____

**Practice 2**

**a.** 3.3 × _____

**b.** 3.33 × _____

**c.** 3.333 × _____

**Practice 3**

**a.** 14.4 × _____

**b.** 1.44 × _____

**c.** 1.444 × _____

**Practice 4**

**a.** .5 × _____

**b.** .05 × _____

**c.** .005 × _____

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Note to the teacher: Write or dictate decimals, mixed decimals, and whole numbers each time this sheet is used.



Multiplying decimals and mixed decimals/*Decimals and Percents*, Unit 4, pp. 33–34.

Subject: _____ Name: _____

Period: _____ Date: _____

# The Nearest Penny

**A.** Round these money amounts to the nearest hundredth. Draw a circle around the correct answer.

1. $.0589 =
   a. $.05 b. $.06
2. $.1134 =
   a. $.11 b. $.12
3. $.89635 =
   a. $.89 b. $.90
4. $.34283 =
   a. $.34 b. $.35
5. $1.9887 =
   a. $1.98 b. $1.99
6. $8.8967 =
   a. $8.89 b. $8.90
7. $12.0803 =
   a. $12.08 b. $12.09
8. $29.99765 =
   a. $29.99 b. $30.00

---

**B.** Read and solve the word problems. (Multiply to solve the problems.) Round your answers to the nearest hundredth. Do all your math work on another sheet of paper.

1. Jeff puts 13.6 gallons of gas into his car. He pays $.89 per gallon. How much does he pay altogether?

   **Answer:** _____

2. Maria buys a sweater for $45.25. Tax is $.065 per dollar. How much tax does she pay?

   **Answer:** _____

3. Laura wants to save .3 of her paycheck. If she makes $163.58, how much will she save?

   **Answer:** _____

4. Kerry earns $12.35 an hour. He worked 21.5 hours last week. How much money did he earn in all?

   **Answer:** _____

5. Pauline earns $8.89 an hour. She was sick 8.25 hours this week. How much of her check would be for sick pay?

   **Answer:** _____

6. Mrs. Che buys a 3.89 pound chicken. It costs $1.99 per pound. How much does the chicken cost?

   **Answer:** _____

7. Leroy earns $671.33 a month. How much will he make if he works 6.5 months?

   **Answer:** _____

8. Willie's gross pay is $489.76. The state takes .0318 of it for taxes. How much tax is that?

   **Answer:** _____

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Subject: _____ Name: _____

Period: _____ Date: _____

# Unit 4: Decimal Check

**A.** From the box, choose two factors that give a product with these decimal places. (One is started.)

| 1.7 | 1.005 | .05 | .8 | .108 | 4 |
|---|---|---|---|---|---|

| Factors | | | Product |
|---|---|---|---|
| 1. 4 | × | _____ | = 1 decimal place |
| 2. _____ | × | _____ | = 2 decimal places |
| 3. _____ | × | _____ | = 3 decimal places |
| 4. _____ | × | _____ | = 4 decimal places |
| 5. _____ | × | _____ | = 5 decimal places |
| 6. _____ | × | _____ | = 6 decimal places |

**B.** Read the word problems. Then write the factors for each math problem, and write the decimal point in the product.

1. Gus is planning a dinner for 12 people. He'll serve roast ham for the main course. He'll serve .5 pound per person. How many pounds of ham should he buy?

   -----

   ×-----

   60 pound ham

2. Lloyd's car uses up 9.8 gallons of gas. The car averages 17.3 miles per gallon. How many miles did Lloyd drive?

   -----

   × -----

   16954 miles

**C.** Solve these multiplication problems. Rename products. Round money amounts to the nearest hundredth.

1. 0.9 × 8 =

2. 0.48 × .39 =

3. 3.07 × 5.4 =

4. 2.1 × .006 =

5. Babe buys 2.8 pounds of chicken wings. Wings cost $1.39 per pound. How much does Babe pay?

6. Noah fills his car up with 18.6 gallons of gas. The gas is $1.23 a gallon. How much does Noah pay?

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Unit review/***Decimals and Percents,*** Unit 4, pp. 30–36.

Subject: _____ Name: _____

Period: _____ Date: _____

# Unit 5: Dividing Decimals

**A.** Write these math sentences as division problems. Then solve the problems.

1. 1.35 ÷ 3

2. 98.6 ÷ 17

3. 5.2 ÷ 26

4. .006 ÷ 30

**B.** Show where the decimal point moves to in each dividend. Then write the decimal point correctly in each quotient. (The first is done.)

1. $.4 \overline{)\,.1.48}$ → $.37$

2. $.068 \overline{)\,1.768}$ → $26$

3. $.09 \overline{)\,2.00000...}$ → $22222...$

4. $1.2 \overline{)\,97.750}$ → $8146$

5. $1.01 \overline{)\,31.07600}$ → $30768...$

**C.** Solve these division problems. Show all your math work below. Round your answers to the nearest thousandth.

1. $3 \overline{)\,.33}$

2. $16 \overline{)\,1.232}$

3. $.06 \overline{)\,18.5}$

4. $.05 \overline{)\,4}$

5. $.075 \overline{)\,450}$

6. $.6 \overline{)\,7}$

**Score:**

_____ no. right

_____ no. wrong

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Subject: _____ Name: _____

Period: _____ Date: _____

# Dividing by a Whole Number

Solve these division problems. Show all your math work on another sheet of paper.

**Practice 1**

1. 67.2 ÷ 2 =
2. 33.6 ÷ 2 =
3. 6.72 ÷ 3 =
4. .63 ÷ 3 =
5. 7.5 ÷ 15 =
6. .75 ÷ 3 =
7. 4.27 ÷ 7 =
8. 36.12 ÷ 6 =

**Practice 2**

1. .366 ÷ 2 =
2. .819 ÷ 9 =
3. .112 ÷ 14 =
4. .108 ÷ 12 =
5. .021 ÷ 3 =
6. .098 ÷ 7 =
7. .126 ÷ 21 =
8. 3.08 ÷ 77 =

**Practice 3**

1. .3 ÷ 6 =
2. .4 ÷ 5 =
3. .13 ÷ 4 =
4. .23 ÷ 4 =
5. 8.4 ÷ 15 =
6. 4.5 ÷ 25 =
7. 12 ÷ 32 =
8. 52 ÷ 16 =

**Practice 4**

1. .418 ÷ 8 =
2. 3.52 ÷ 5 =
3. 8.4 ÷ 15 =
4. 2.8 ÷ 16 =
5. 5.103 ÷ 9 =
6. 32.28 ÷ 5 =
7. 2.25 ÷ 12 =
8. .3 ÷ 24 =

**Practice 5**

1. Rudy is building a bookcase. He has a board that's 13.5 meters long. He cuts it into 4 equal pieces. How long is each piece?

   **Answer:** _____ meters

2. Carla is cutting a piece of wire that is 25 feet long. She must cut the wire into 8 equal pieces. How long is each piece?

   **Answer:** _____ feet

3. Mr. Sabado is a gardener. He takes care of 40 lawns. He buys a 50-pound bag of fertilizer to use on all the lawns. On an average, how much will he put on each lawn?

   **Answer:** _____ pounds

4. A store sells 2 bags of potato chips for $3. How much would one bag cost?

   **Answer:** $_____

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Subject: _____ Name: _____

Period: _____ Date: _____

# Dividing Numbers by a Decimal

Solve these division problems. Show all your math work on another sheet of paper.

**Practice 1**

1. .4 ÷ .2 =
2. .36 ÷ .2 =
3. 4.4 ÷ .4 =
4. 1.05 ÷ .5 =
5. .36 ÷ .06 =
6. .88 ÷ .11 =
7. 28.4 ÷ .4 =
8. 3.12 ÷ .6 =

---

**Practice 2**

1. 9.6 ÷ .4 =
2. .512 ÷ .8 =
3. 2.412 ÷ .12 =
4. .56 ÷ 1.4 =
5. 9.32 ÷ .02 =
6. 10.35 ÷ .06 =
7. .115 ÷ 1.15 =
8. 5.28 ÷ 1.2 =

---

**Practice 3**

1. 1.4 ÷ .07 =
2. 153 ÷ .5 =
3. .42 ÷ .006 =
4. 3.5 ÷ .35 =
5. 11.12 ÷ 1.60 =
6. 5.55 ÷ 1.11 =
7. 8.2 ÷ 4.1 =
8. 37.6 ÷ .25 =

---

**Practice 4**

1. 10.35 ÷ .06 =
2. .3568 ÷ .04 =
3. 1.118 ÷ 1.3 =
4. 153.7 ÷ .53 =
5. .516 ÷ .86 =
6. 78 ÷ 12.5 =
7. 39 ÷ .13 =
8. 86.4 ÷ 1.44 =

---

**Practice 5**

1. Dana is making place mats. Each mat is .35 meters long. She'll cut the mats from fabric that's 12.6 meters long. How many mats will she make?

   **Answer:** _____ mats

2. Lonnie spent $5.32 at the hardware store. He bought nails that are $.19 each. How many nails did he buy?

   **Answer:** _____ nails

3. Mary bought 5.6 pounds of meat. It cost her $7.84. How much did the meat cost per pound?

   **Answer:** $_____ per pound

4. Joseph pays $15.75 for 12.5 gallons of gas. How much would one gallon of gas cost?

   **Answer:** $_____ per gallon

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Subject: _____ Name: _____

Period: _____ Date: _____

# Round Off!

Solve these division problems. Show all your math work on another sheet of paper. Round your answers to the nearest: **hundredth** **thousandth**

1. .335 ÷ 22 = _____

2. 18.43 ÷ 200 = _____

3. 394 ÷ 14.8 = _____

4. 2.8 ÷ .49 = _____

5. 659 ÷ 1.5 = _____

6. 32.3 ÷ 9.7 = _____

7. 1.1 ÷ .36 = _____

8. .258 ÷ 1.4 = _____

9. 7.2 ÷ .67 = _____

10. 50 ÷ .55 = _____

Note to the teacher: Circle the number students round to.

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Subject: _____ Name: _____

Period: _____ Date: _____

# Practice Rounding

Round these amounts to the nearest hundredth and to the nearest thousandth.

| Amount | Nearest Hundredth | Nearest Thousandth |
|---|---|---|
| 1. 3.58996 | a. _____ | b. _____ |
| 2. 4.89512 | a. _____ | b. _____ |
| 3. 12.0409 | a. _____ | b. _____ |
| 4. 1.93914 | a. _____ | b. _____ |
| 5. 2.7888 | a. _____ | b. _____ |
| 6. .433333 | a. _____ | b. _____ |
| 7. 12.42375 | a. _____ | b. _____ |
| 8. 10.111111 | a. _____ | b. _____ |
| 9. .8961 | a. _____ | b. _____ |
| 10. 24.0891 | a. _____ | b. _____ |
| 11. .00192 | a. _____ | b. _____ |
| 12. 1.454545 | a. _____ | b. _____ |
| 13. 50.023 | a. _____ | b. _____ |
| 14. .00666 | a. _____ | b. _____ |
| 15. 248.3182 | a. _____ | b. _____ |

**Bonus:** 1. Choose three amounts from above. Explain to the other students in class how you rounded to hundredths and thousandths.

2. Make a poster that shows how to round a number to the nearest hundredth or thousandth.

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Subject: _____ Name: _____

Period: _____ Date: _____

# Unit 5: Decimal Check

**A.** Look at these problems closely. Explain why the decimal point is in the correct place in each dividend. Then solve the problems.

1. _____

_____

2. $\overline{)}.24$

2. _____

_____

.4 $\overline{)}3.2.$

3. _____

_____

.5 $\overline{)}1.0$

4. _____

_____

.018 $\overline{)}317.700.$

**B.** Read and solve these word problems. Show all your math work on another sheet of paper. Round your answer to the nearest hundredth.

1. A drugstore sells six rolls of bath tissue for $1.79. How much would one roll cost?

   **Answer:** $_____ per roll

2. Frank called long distance to Korea. He was charged $4.25 per minute. His total bill was $15.27. How many minutes did Frank talk?

   **Answer:** _____ minutes

3. Susan drives 41.5 miles one way to work. It takes her .75 hour. How fast does she drive?

   **Answer:** _____ miles per hour

4. Josie buys a 3.20 pound chicken. She pays $3.68. What is the price per pound?

   **Answer:** $_____ per pound

5. Vern earns $32.75 in an 8-hour day. How much does he earn per hour?

   **Answer:** $_____ per hour

6. Irma buys gas that costs $1.099 per gallon. She has $20 to use to buy gas. How many gallons of gas can she buy in all?

   **Answer:** _____ gallons

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Subject: _____ Name: _____

Period: _____ Date: _____

# Unit 6: Percents

**A.** Put a ✔ next to each number that has a denominator of hundredths.

_____ 1. $\frac{2}{3}$ _____ 5. 75%

_____ 2. 10% _____ 6. $\frac{2}{5}$

_____ 3. .25 _____ 7. 48%

_____ 4. .899 _____ 8. $\frac{21}{100}$

**B.** Write the percent for each amount.

_____ 1. $\frac{42}{100}$ of a mile

_____ 2. $\frac{50}{100}$ of a dollar

_____ 3. $\frac{15}{100}$ of a math test

_____ 4. $\frac{100}{100}$ of a book

_____ 5. $\frac{8}{100}$ of an inch

**C.** Solve these word problems. Show all your work below.

1. The Avery team won 80% of its soccer games. What percent did they lose?

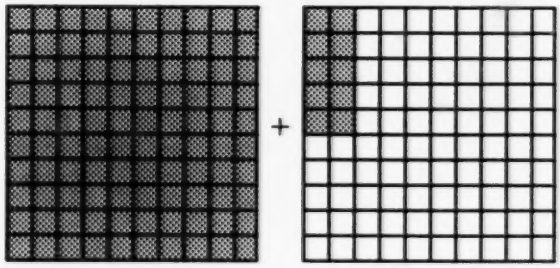
**Answer:** _____

2. The Jones Company is losing money. It must lay off 35% of its workers. What percent of the workers will still hold a job at the Jones Company?

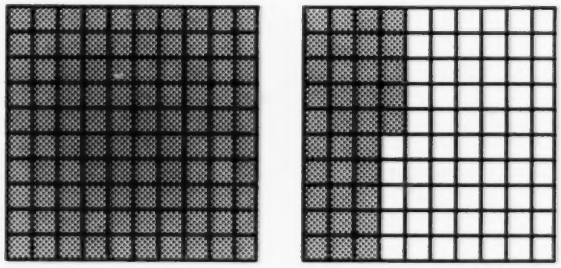
**Answer:** _____

**D.** Which one of these percents shows the amount that is shaded in each problem? Write the percent below, and then answer the question.

**35%** **80$\frac{1}{2}$%** **100%** **110%**



1. _____%



2. _____% 3. _____%

**E.** Write equivalent percents for these numbers.

1. $\frac{1}{10}$ = 5. .4 =

2. $\frac{3}{100}$ = 6. .65 =

3. $\frac{25}{100}$ = 7. 1.5 =

4. $\frac{3}{3}$ = 8. .20 =

**Score:**

_____ no. right

_____ no. wrong

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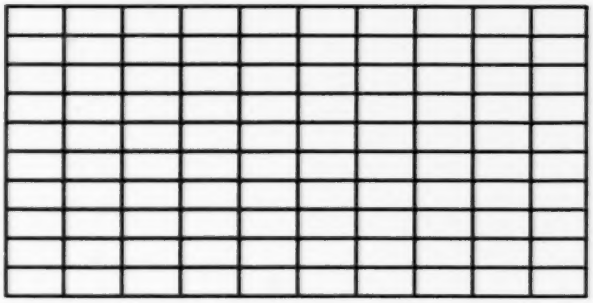
Subject: _____ Name: _____

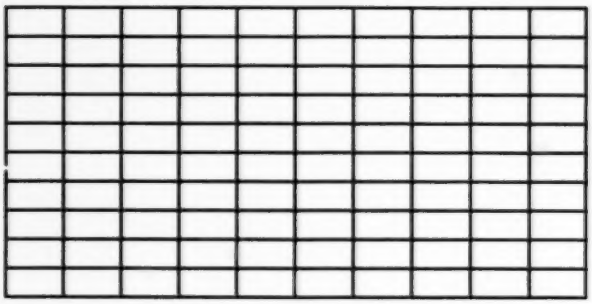
Period: _____ Date: _____

# Hundredths

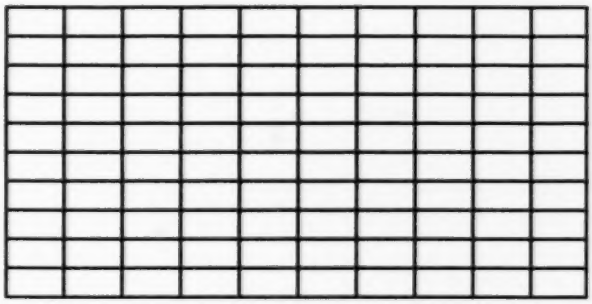
All these shapes are divided into hundredths. Count the hundredths that are shaded. Then write the decimal that shows that amount.



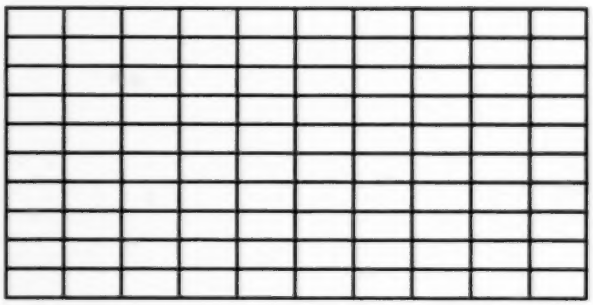
1. _____



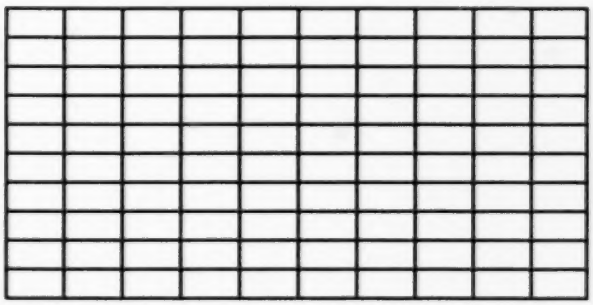
4. _____



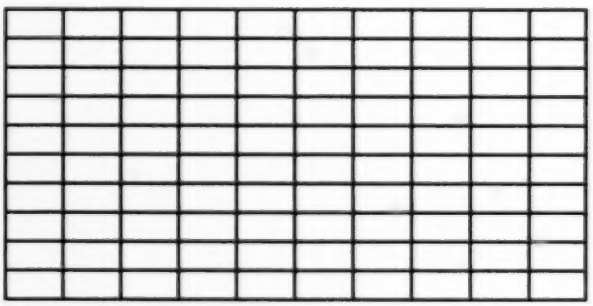
2. _____



5. _____



3. _____



6. _____

**Bonus:** Write the fraction and decimal that also show the shaded parts in each shape. Write those numbers next to the percents.

Note to the teacher: Shade in parts for each shape each time you use this sheet.



DP48

Showing hundredths/***Decimals and Percents,*** Unit 6, p. 46.

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Subject: _____ Name: _____

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# Percents All Around You

Look around your classroom and school, home and neighborhood for amounts of things that you could show in percents. Write the names of those things below. Then write the whole amount that makes up 100%, and an example of an amount that's a percent of the whole amount. (One is done.)

| Thing | 100% (Whole Amount) | A Percent (Part of the Whole) |
|---|---|---|
| ***In Your Classroom*** | | |
| 1. Math textbooks | 36 books | 18 books |
| 2. | | |
| 3. | | |
| 4. | | |
| ***Around Your School*** | | |
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |
| ***Around Your Home*** | | |
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |
| ***Around Your Neighborhood*** | | |
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |

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Identifying 100 percent and a percent/***Decimals and Percents,*** Unit 6, pp. 48–49.

Subject: _____ Name: _____

Period: _____ Date: _____

# What's the Percent?

**A.** Write the percent for these numbers. (One is done.)

1. 40 people = 100%
   - **a.** 36 people = 90 parts out of 100 parts — 90%
   - **b.** 20 people = 50 parts out of 100 parts _____
   - **c.** 12 people = 30 parts out of 100 parts _____
   - **d.** 8 people = 20 parts out of 100 parts _____

2. 125 people = 100%
   - **a.** 120 people = 96 parts out of 100 parts _____
   - **b.** 105 people = 84 parts out of 100 parts _____
   - **c.** 80 people = 64 parts out of 100 parts _____
   - **d.** 30 people = 24 parts out of 100 parts _____
   - **e.** 15 people = 12 parts out of 100 parts _____

---

**B.** Read these sentences. Put an **X** in front of the correct answer.

1. Carl gets $5 from his parents every week. He spends 40% of it for food.
   - _____ **a.** 40% is $.40 out of $5
   - _____ **b.** 40% is $\frac{40}{100}$ of $5
   - _____ **c.** 40% is $\frac{40}{500}$ of $5

2. Rene borrows $2,000 to buy a used car. She pays back 25% of the loan every month.
   - _____ **a.** 25% is $\frac{25}{2{,}000}$ of $2,000
   - _____ **b.** 25% is $25 out of $2,000
   - _____ **c.** 25% is $\frac{25}{100}$ of $2,000

3. Jan ran in 30 races last year. She won 90% of those races.
   - _____ **a.** 90% is $\frac{3}{9}$ of 30 races
   - _____ **b.** 90% is 9 out of 30 races
   - _____ **c.** 90% is $\frac{90}{100}$ of 30 races

4. A wool skirt costs $48.00. The store sells it at 60% off.
   - _____ **a.** 60% is $\frac{60}{100}$ of $48.00
   - _____ **b.** 60% is $\frac{60}{4800}$ of $48.00
   - _____ **c.** 60% is $6.00 out of $48.00

5. Ted's Cars got 25 new cars to sell. The company sold 80% in one week.
   - _____ **a.** 80% is 8 out of 25 cars
   - _____ **b.** 80% is $\frac{80}{100}$ of 25 cars
   - _____ **c.** 80% is $\frac{25}{80}$ of 25 cars

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Subject: _____ Name: _____

Period: _____ Date: _____

# Adding and Subtracting Percents

**A.** Solve these problems. Show all your math work below.

1. 100% − 82% =

2. 60% + 15% + 25% =

3. 100% − 28.8% =

4. 100% + 100% + 23% =

5. 155% − 55% =

6. 18.25% + 81.75% =

7. $100 - 6\frac{1}{2}\% =$

8. $80\frac{2}{3}\% + 16\frac{1}{3}\% + 22\% =$

**B.** Read and solve these word problems. Show all your math work below.

1. Tony earns $750 every month. 28.2% of his earnings go to taxes. What percent of $750 does he take home?

2. A company made a profit of 114% this year. How much more than last year's profit is that?

3. Diane is saving up money for a trip. So far, she has 60% of what she needs. What percent more does she need?

4. George Low got 22% of the votes in the election. Chuck Smith got 17% of the votes. The rest of the votes went to Mayor Santos. What percent of the votes did Mayor Santos get? (Hint: you must do two math steps.)

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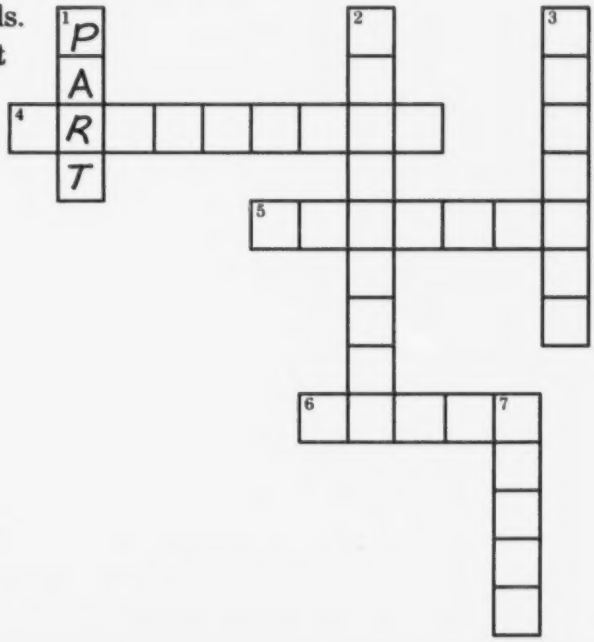
Subject: _____ Name: _____

Period: _____ Date: _____

# Unit 6: Percent Check

**A.** Finish the crossword puzzle. Use these words.

**equal fractions greater part hundredth percent whole**




**Across:**

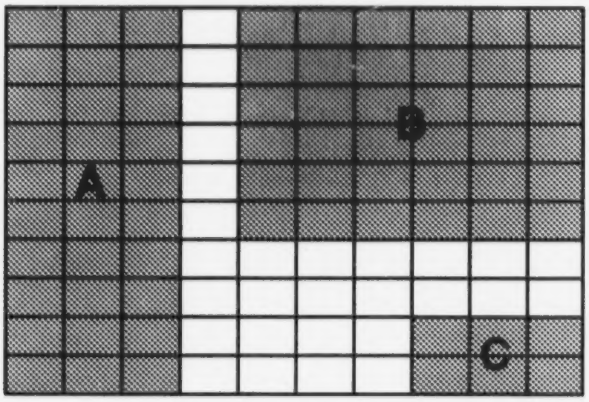
4. $\frac{1}{2}$% and .25% are _____ of a percent.
5. The _____ sign looks like this: %.
6. 100% always shows a _____ amount.

**Down:**

1. 15% is a _____ of an amount.
2. A percent is one _____ of an amount.
3. 125% shows an amount that is _____ than 100%.
7. Percents are used when a whole amount is divided into 100 _____ parts.

---

**B.** This shape is divided into 100 equal parts.




1. What percent is shaded in part A?

   _____

2. What percent is shaded in part B?

   _____

3. What percent is shaded in part C?

   _____

4. What total percent of the shape is shaded?

   _____

5. What total percent of the shape is not shaded?

   _____

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Subject: _____ Name: _____

Period: _____ Date: _____

# Unit 7: Ratios

**A.** Put an **X** in front of each number that is a ratio.

| | |
|---|---|
| ____ 1. 2 : 4 | ____ 5. 50% |
| ____ 2. .86 | ____ 6. 121 |
| ____ 3. $\frac{2}{3}$ | ____ 7. $9^2$ |
| ____ 4. 1.5 | ____ 8. $\frac{1}{2}$ |

**B.** Read the math sentences. Then write ratios that compare the amounts. Write ratios with a colon and as a fraction.

1. Two out of 14 hours

   a. with colon:

   b. fraction:

2. 338 out of 1,863 students

   a. with colon:

   b. fraction:

3. $5 out of $10

   a. with colon:

   b. fraction:

4. 87 out of 100 pennies

   a. with colon:

   b. fraction:

**C.** Rename these percents as fractions.

| | |
|---|---|
| 1. 25% = | 4. 88% = |
| 2. 50% = | 5. 17% = |
| 3. 62% = | 6. 112% = |

**D.** Read and solve these word problems. Write the ratios as fractions. Reduce ratios to their lowest terms.

1. Millie and her family are driving to Portland. They must travel 250 miles. Millie takes a turn driving and drives 75 miles. What's the ratio of miles that Millie drives?

2. JoAnn works 40 hours a week. Last week she typed letters for 22 hours. She spent the rest of the hours doing other things. Find the ratio of hours that JoAnn typed letters. Find the ratio of hours that JoAnn did other things.

| letters | other things |
|---|---|
| | |

**Score:**

_____ no. right

_____ no. wrong

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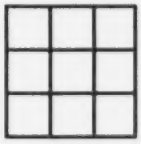
Subject: _____ Name: _____

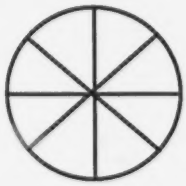
Period: _____ Date: _____

# What's the Ratio?

Look at the parts that are shaded in these shapes. Write a ratio that compares the shaded parts to the whole amount. Write your ratios as fractions.

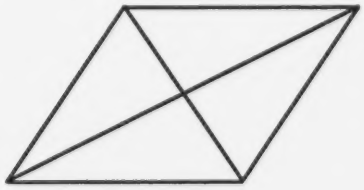


1. _____

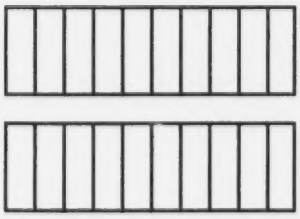


2. _____

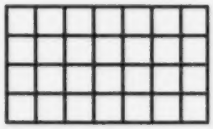
3. _____



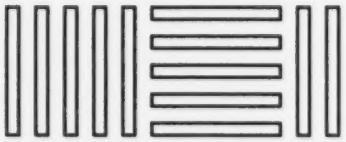
4. _____



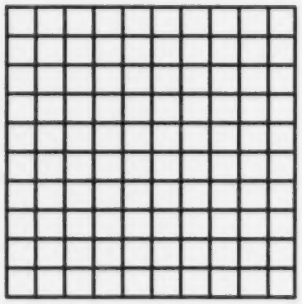
5. _____



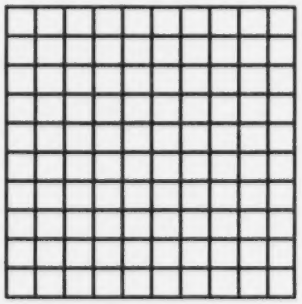
6. _____



7. _____



8. _____



9. _____

**Bonus:** Write ratios that show the unshaded parts in the shapes.

Note to the teacher: Shade in parts of the shapes each time you use this sheet.

DP54



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Subject: _____ Name: _____

Period: _____ Date: _____

# Ratio Breakdown

This chart shows the breakdown of sex, class, age, and ethnic background of all the students who attend McAuffie High School. Rename the percents as ratios with colons. Then rename them as fractions.

***McAuffie High School***

| | Percent | Ratio | Fractions |
|---|---|---|---|
| **Sex** | | | |
| **1.** Female | 51% | _____ | _____ |
| **2.** Male | 49% | _____ | _____ |
| **Age** | | | |
| **3.** 13 years | 1% | _____ | _____ |
| **4.** 14 years | 22% | _____ | _____ |
| **5.** 15 years | 26% | _____ | _____ |
| **6.** 16 years | 28% | _____ | _____ |
| **7.** 17 years | 21% | _____ | _____ |
| **8.** 18 years | 2% | _____ | _____ |
| **Ethnic Background** | | | |
| **9.** White | 29% | _____ | _____ |
| **10.** Black | 23% | _____ | _____ |
| **11.** Hispanic | 17% | _____ | _____ |
| **12.** Asian | 10% | _____ | _____ |
| **13.** Pacific Islander | 13% | _____ | _____ |
| **14.** American Indian | 1% | _____ | _____ |
| **15.** Other | 7% | _____ | _____ |

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DP55

Subject: _____ Name: _____

Period: _____ Date: _____

# Reducing Ratios

**A.** Write ratios that compare these amounts. Write the ratios as fractions, then reduce them to their lowest terms. Show all your math work below.

1. 4 out of 8 math problems
2. 6 out of 15 feet
3. $10 out of $24
4. 9 out of 36 inches
5. 25 out of 80 hours
6. 18 out of 32 kilometers
7. 27 out of 54 people
8. $42 out of $120
9. 78 out of 156 tickets
10. 98 out of 180 feet
11. 126 out of 360 degrees

**B.** Rename these percents as ratios. Write the ratios as fractions. Then reduce the ratios to lowest terms. Show all your math work below.

1. 6%
2. 15%
3. 18%
4. 10%
5. 32%
6. 25%
7. 40%
8. 82%
9. 66%
10. 75%
11. 112%

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Subject: _____ Name: _____

Period: _____ Date: _____

# Ratios in Word Problems

Solve these word problems. Write ratios as fractions, then reduce them to their lowest terms.

1. Dolly must read a 25-page report. She read _____ pages last night. What ratio of pages did she read?

2. Dan and Todd share an apartment. The rent is $550. Dan has a bigger room than Todd, so Dan pays more rent. Dan pays $_____. What's the ratio of rent that Dan pays?

3. Mitchell is training for the Olympics. He swims _____ hours every day. Find the ratio of hours that he trains each day.

4. The Navaltas invited 250 people to their wedding. _____ people came. Find the ratio of people who came.

5. The Soda Company is selling a new soda. The soda has _____% juices in it. What's the ratio of juices in the soda?

6. Laura sells leather bags that she makes. She gets a _____% profit on every bag she sells. What's the ratio of profit that Laura gets on one bag?

7. _____% of the students at Cray Junior High usually go to Quaid High School. What's the ratio of junior high students that go to Quaid High School?

8. Ralph leaves a tip of _____% for the waiter. Find the ratio that shows how much tip Ralph leaves the waiter.

9. Leed's Hospital must lay off _____% of its nurses. What's the ratio of nurses that lose their jobs? What's the ratio of nurses that keep their jobs?

| lose jobs | keep jobs |
|---|---|
| | |

10. Ronnie had a _____% attendance in school last year. Find the ratio of days that he was in school. Find the ratio of days that he wasn't in school.

| in school | not in school |
|---|---|
| | |

Note to the teacher: Write in amounts each time you use this sheet.

DP57

Ratios in word problems/***Decimals and Percents,*** Unit 7, p. 56.



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Subject: _____ Name: _____

Period: _____ Date: _____

# Unit 7: Percent Check

**A.** Rename these ratios as fractions.

1. 3 : 6 _____
2. 11 : 44 _____
3. 80% _____
4. 35 : 73 _____
5. 41% _____
6. 6% _____

**B.** Write the total number of students that are in your class. Next, write how many students have these characteristics. Then find ratios. Write the ratios with a colon.

_____ total students

1. _____ students with blue eyes

   **ratio:** _____

2. _____ students with brown eyes

   **ratio:** _____

3. _____ students with eyes of another color

   **ratio:** _____

4. _____ students with black hair

   **ratio:** _____

5. _____ students with blond hair

   **ratio:** _____

6. _____ students with brown hair

   **ratio:** _____

7. _____ students with hair of another color

   **ratio:** _____

**C.** Write the ratios from exercise **B** below. Write them as fractions. Reduce them to lowest terms. (Show all your math work below.)

1.

2.

3.

4.

5.

6.

**D.** Write a word problem whose answer is a ratio. That ratio should compare a part with its whole.

_____

_____

_____

_____

_____

_____

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Subject: _____ Name: _____

Period: _____ Date: _____

# Unit 8: Proportions

**A.** Put an **X** in front of the correct proportion.

1. Two out of four is the same as 50 out of 100.

_____ **a.** $\frac{2}{50} = \frac{4}{100}$

_____ **b.** $\frac{2}{100} = \frac{50}{4}$

_____ **c.** $\frac{2}{4} = \frac{50}{100}$

2. Three out of five is the same as 18 out of 30.

_____ **a.** $\frac{3}{5} = \frac{18}{30}$

_____ **b.** $\frac{3}{18} = \frac{5}{30}$

_____ **c.** $\frac{3}{30} = \frac{18}{5}$

3. 12 out of 20 is the same as three out of five.

_____ **a.** $\frac{12}{5} = \frac{3}{20}$

_____ **b.** $\frac{12}{20} = \frac{3}{5}$

_____ **c.** $\frac{12}{3} = \frac{20}{5}$

4. 75 out of 100 is the same as three out of four.

_____ **a.** $\frac{75}{4} = \frac{3}{100}$

_____ **b.** $\frac{75}{100} = \frac{3}{4}$

_____ **c.** $\frac{75}{3} = \frac{100}{4}$

**B.** Prove that these proportions are correct. Show all your work below.

1. $\frac{2}{3} = \frac{4}{6}$

2. $\frac{4}{8} = \frac{8}{16}$

3. $\frac{6}{9} = \frac{12}{18}$

**C.** Write proportions for these problems.

1. 50% is the same as 2 out of 4

2. 25% is the same as 3 out of 12

3. 75% is the same as 15 out of 20

4. 30% is the same as 3 out of 10

**Score:**

_____ no. right

_____ no. wrong

DP59

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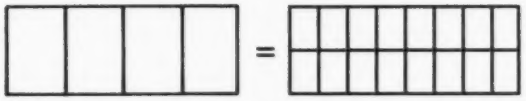
Subject: _____ Name: _____

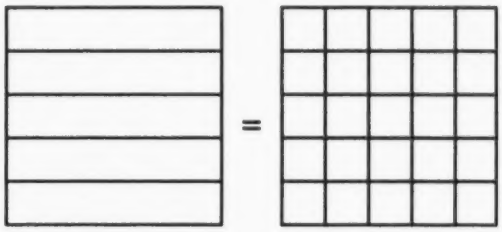
Period: _____ Date: _____

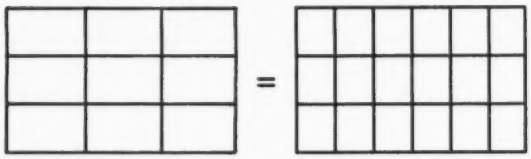
# The Same As

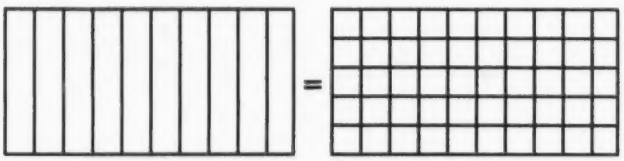
**A.** Write a proportion for each set of equivalent ratios.

1.

2. 

3. 

4. 

5. 

**B.** Write a proportion for each set of equivalent ratios.

1. 1 out of 2 games is the same as _____ out of _____ games.

   **Proportion:**

2. $2 out of $5 is the same as $_____ out of $_____.

   **Proportion:**

3. 2 out of 7 students is the same as _____ out of _____ students.

   **Proportion:**

4. 5 out of 12 cities is the same as _____ out of _____ cities.

   **Proportion:**

5. 9 out of 10 women is the same as _____ out of _____ women.

   **Proportion:**

6. 6 out of 8 books is the same as _____ out of _____ books.

   **Proportion:**

**Bonus:** Prove that the proportions are true.

Note to the teacher: Shade in parts of the shapes in **A** and write equivalent ratios or one known term in **B**.

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Subject: _____ Name: _____

Period: _____ Date: _____

# Proportion Check

Find out if these proportions are true. Check them by: **finding cross products** **reducing**
Show all your math work below.

| | | |
|---|---|---|
| **1.** $\frac{2}{8} = \frac{4}{16}$ | **2.** $\frac{5}{15} = \frac{10}{25}$ | **3.** $\frac{4}{6} = \frac{14}{21}$ |
| **4.** $\frac{3}{9} = \frac{15}{27}$ | **5.** $\frac{6}{15} = \frac{30}{75}$ | **6.** $\frac{10}{12} = \frac{18}{20}$ |
| **7.** $\frac{9}{27} = \frac{18}{36}$ | **8.** $\frac{12}{15} = \frac{44}{45}$ | **9.** $\frac{8}{16} = \frac{72}{84}$ |
| **10.** $\frac{18}{20} = \frac{72}{80}$ | **11.** $\frac{8}{60} = \frac{48}{100}$ | **12.** $\frac{14}{28} = \frac{56}{112}$ |
| **13.** $\frac{26}{30} = \frac{72}{90}$ | **14.** $\frac{30}{100} = \frac{150}{2700}$ | **15.** $\frac{120}{2400} = \frac{360}{72000}$ |

Note to the teacher: In the directions, circle *finding cross products* or *reducing*.

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Subject: _____ Name: _____

Period: _____ Date: _____

# Math Scores

Some students took a math test. This is a chart of their scores. Next to the chart, write proportions for each score. Check your proportions by finding cross products or reducing both ratios. Show your math work.

**Math Test: 20 problems**

| Name | Number Problems Correct | Percent |
|---|---|---|
| 1. John | 17 | 85% |
| 2. Amie | 12 | 60% |
| 3. Gina | 10 | 50% |
| 4. Joseph | 16 | 80% |
| 5. Robert | 15 | 75% |
| 6. Lee | 13 | 65% |
| 7. Sarah | 8 | 40% |
| 8. Dennis | 18 | 90% |
| 9. Helen | 6 | 30% |
| 10. Earl | 14 | 70% |
| 11. Carol | 11 | 55% |
| 12. Winifred | 20 | 100% |
| 13. Charlie | 19 | 95% |
| 14. Leah | 13 | 65% |
| 15. Kathy | 4 | 20% |
| 16. Marlon | 7 | 35% |
| 17. Ace | 9 | 45% |
| 18. Janet | 5 | 25% |

**Proportions**

| | |
|---|---|
| 1. John | 2. Amie |
| 3. Gina | 4. Joseph |
| 5. Robert | 6. Lee |
| 7. Sarah | 8. Dennis |
| 9. Helen | 10. Earl |
| 11. Carol | 12. Winifred |
| 13. Charlie | 14. Leah |
| 15. Kathy | 16. Marlon |
| 17. Ace | 18. Janet |

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Subject: _____ Name: _____

Period: _____ Date: _____

# Proportions in Word Problems

Read these word problems. Write a proportion for each problem. Check your proportions by finding the cross products or reducing both ratios. Show all your math work on another sheet of paper.

1. Jay is trying to save $420. He has saved up 45% of that amount. That's $189.

   **Proportion:**

2. Bird Airlines is selling tickets to Hawaii at 40% off. The tickets now cost $128. The regular price is $320.

   **Proportion:**

3. Joe pitched 3 out of every 5 games. He pitched 60% of all the games.

   **Proportion:**

4. Rosaly got a 10% raise. She used to earn $340 a week. She earns $34 more.

   **Proportion:**

5. A state charges an 8% sales tax on things such as clothing. If a dress costs $50, the tax is $4.

   **Proportion:**

6. Toru has 110 credits. That's 50% of the credits he needs to graduate from high school. The total is 220 credits.

   **Proportion:**

7. Merle is gaining weight. She will gain a total of 30 pounds. She will gain about 3 pounds a month. That's a 10% weight gain per month.

   **Proportion:**

8. Sea Water Hotel earned $56,000 in 1984. Its earnings increased 140% in 1985. That year it earned $78,400.

   **Proportion:**

9. Carl works at a restaurant. Every day he cuts 50 pounds of potatoes. In one hour, he can cut 30% of that amount. In other words, he cuts 15 pounds.

   **Proportion:**

10. The Santos family has 60 members in all. 45 members have gone to college. That's 75% of the family.

    **Proportion:**

11. Mr. Dundee put $2,500 into a savings bond. After 1 year, the bond earned $275. After 20 years (simple interest), it earned $5,500.

    **Proportion:**

12. Billy Jo is on a special diet. He must eat 2,000 calories every day. He must eat at least 35% of the calories in protein. That's about 700 calories.

    **Proportion:**

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Subject: _____ Name: _____

Period: _____ Date: _____

# Unit 8: Percent Check

**A.** Read this problem. Then answer the questions about it.

A math test has 8 problems on it. Paul got 6 problems correct. His score is 75%.

1. What are the two equivalent ratios?

   _____

   _____

2. Write a proportion that shows the two equivalent ratios.

3. Check your ratio by (show all your math work):

   a. finding the cross products

   b. reducing both ratios

**B.** Answer these questions in your own words. (A page number from *Decimals and Percents* is listed after some questions. If you need help, look at that page.)

1. What is a proportion? (page 59)

   _____

   _____

2. Why can you check a proportion by finding its cross products? (page 60)

   _____

   _____

   _____

   _____

3. Why can you check a proportion by reducing both its ratios? (page 60)

   _____

   _____

   _____

   _____

4. Does this proportion show that 50% of $14 is the same as $7 out of $14? Why is that so?

   $\frac{7}{14} = \frac{50}{100}$

   _____

   _____

   _____

   _____

   _____

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# Unit 9: Solving Percent Problems

**A.** Identify the amount that is the unknown term in each proportion. Write *percent, part,* or *total.*

_____ 1. $\frac{5}{x} = \frac{50}{100}$

_____ 2. $\frac{5}{10} = \frac{x}{100}$

_____ 3. $\frac{50}{100} = \frac{x}{10}$

**B.** Which proportion would you use to solve each percent problem? Put a ✔ next to the correct proportion.

1. $2 out of $4 is the same as what percent of $4?

   _____ a. $\frac{2}{4} = \frac{x}{4}$

   _____ b. $\frac{2}{4} = \frac{x}{100}$

   _____ c. $\frac{2}{4} = \frac{4}{x}$

2. What out of $4 is the same as 25% of that amount?

   _____ a. $\frac{x}{4} = \frac{25}{100}$

   _____ b. $\frac{25}{4} = \frac{x}{4}$

   _____ c. $\frac{25}{x} = \frac{x}{4}$

3. 25% is the same as $1 out of what whole amount?

   _____ a. $\frac{25}{x} = \frac{1}{x}$

   _____ b. $\frac{25}{100} = \frac{1}{x}$

   _____ c. $\frac{x}{1} = \frac{25}{100}$

**C.** Read these problems. Solve them by using a proportion. Then check to see if your proportion is correct. Show all your math work below.

1. Jerry's check is $20. He gives the waiter a 15% tip. How much is the tip?

   **Answer:** _____

2. A coat used to cost $280. Its price is reduced to $140. What is the percent of the reduction?

   **Answer:** _____

3. A school has 858 students that are boys. That's 55% of the total student body. What is the total number of students?

   **Answer:** _____

**Score:**

_____ no. right

_____ no. wrong

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# Which Is the Unknown Term?

**A.** Draw a line from the problem to its proportion.

1. Find 40% of $20
2. $4 is 40% of what amount?
3. What percent is $4 of $20?

a. $\frac{4}{20} = \frac{X}{100}$

b. $\frac{40}{100} = \frac{X}{20}$

c. $\frac{40}{100} = \frac{4}{X}$

---

4. What is 25% of $12?
5. What percent is $3 of $12?
6. Find the amount that $3 is 25% of.

a. $\frac{25}{100} = \frac{3}{X}$

b. $\frac{25}{100} = \frac{X}{12}$

c. $\frac{3}{12} = \frac{X}{100}$

---

7. $3.50 is 10% of what amount?
8. What percent of $35 is $3.50?
9. What is 10% of $35?

a. $\frac{10}{100} = \frac{3.50}{X}$

b. $\frac{10}{100} = \frac{X}{35}$

c. $\frac{3.50}{35} = \frac{X}{100}$

---

10. $12 is what percent of $80?
11. $12 is 15% of what amount?
12. Find 15% of $80.

a. $\frac{12}{80} = \frac{X}{100}$

b. $\frac{15}{100} = \frac{X}{80}$

c. $\frac{15}{100} = \frac{12}{X}$

---

13. Find what percent $25 is of $125.
14. $25 is 20% of what amount?
15. What is 20% of $125?

a. $\frac{25}{125} = \frac{X}{100}$

b. $\frac{20}{100} = \frac{X}{125}$

c. $\frac{20}{100} = \frac{25}{X}$

**B.** These proportions are set up to solve a percent problem. Look at each proportion and answer the questions.

1. $\frac{6}{30} = \frac{X}{100}$

   a. What are you finding?

   b. Write a percent problem that you might solve with this proportion?

2. $\frac{25}{100} = \frac{8}{X}$

   a. What are you finding?

   b. Write a percent problem that you might solve with this proportion.

3. $\frac{50}{100} = \frac{X}{36}$

   a. What are you finding?

   b. Write a percent problem that you might solve with this proportion.

**Bonus:** Find the unknown term in each problem.

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# What's the Part?

Solve these problems by using a proportion. Check your proportions by finding cross products or reducing ratios. Show all your math work on another sheet of paper.

**Practice 1**

1. What is 10% of 40?
2. What is 10% of 60?
3. Find 10% of 75.
4. Find 10% of 115.
5. What is 25% of 12?
6. What is 25% of 48?
7. What is 25% of 50?
8. What is 25% of 125?
9. Find 60% of 20.
10. Find 60% of 32.
11. Find 60% of 180.
12. Find 60% of 125.

---

**Practice 2**

1. What is 12% of 50 people?
2. Find 25% of $40.
3. Find 50% of 78 boxes.
4. What is 15% of 48 feet?
5. Find 80% of 120 pounds.
6. What is 10% of $500?
7. Find 60% of $112.
8. Find 90% of 27 miles.
9. What is 45% of 240 students?

---

**Practice 3**

1. Suppose you're a salesperson for a jewelry store. You get 30% of everything you sell. You sell a watch that costs $90. How much do you get?
2. Let's say you earn $586 every two weeks. 12% of that amount goes to taxes. How much tax is taken out of your paycheck every two weeks?
3. Shoes are on sale at 45% off. You buy a pair that usually costs $75. How much money do you save?
4. You take your parents out to dinner. The check comes to $36.50. You leave the waiter a tip that is 15% of your check. How much do you leave?
5. You were late paying your store bill last month. The store charged you a 20% finance charge. Your bill was $28.20. How much extra did you pay?
6. You borrow $800 from a bank to buy stereo equipment. The bank charges you 18% interest. How much interest will you pay back to the bank?
7. You buy a package of paper. It costs $3. Sales tax is 8%. How much tax do you pay on the package of paper?
8. You have $420 in your savings account. The bank pays you 11% interest. How much money is added to your account?

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# What's the Percent?

Solve these problems by using a proportion. Check your proportions by finding cross products or reducing ratios. Show all your work on another sheet of paper.

**Practice 1**

1. What percent is 10 of 40?
2. What percent is 15 of 45?
3. 25 of 100 is what percent?
4. 50 of 75 is what percent?
5. 80 of 240 is what percent?
6. Find what percent 30 is of 120.
7. Find what percent 75 is of 300.
8. What percent is 250 of 1,500?

---

**Practice 2**

1. What percent is 4 out of 5 base hits?
2. Find what percent 6 pounds is of 10 pounds.
3. 15 boys is what percent of 20 students?
4. What percent is 36 feet of 72 feet?
5. $25 is what percent of $125?
6. 54 "yes" votes out of 90 votes is what percent?
7. What percent is 50 out of 200 miles?
8. Find what percent $105 is of $140.

---

**Practice 3**

1. Suppose you work part time. You get a paycheck every two weeks. Your earnings are $280. But your employer takes out a certain amount for these taxes. Find out what percent each amount is of $280.
   a. $19.60 for social security tax
   b. $42 for federal income tax
   c. $8.40 for state income tax
2. Suppose your take-home pay every month is $620. Here are some things you use your money for. What percent is each amount of $620?
   a. $240 for rent
   b. $120 for car loan
   c. $60 for savings
   d. $30 for charge card
   e. $150 for food, gasoline, clothes, and other things
3. Suppose you must eat only 2,000 calories per day. What percent of 2,000 calories is each of these amounts?
   a. 600 calories for breakfast
   b. 580 calories for lunch
   c. 480 calories for dinner
   d. 340 calories for snacks

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# What's the Total Amount?

Solve these problems by using a proportion. Check your proportions by finding cross products or reducing ratios. Show all your math work on another sheet of paper.

**Practice 1**

1. 3 is 15% of what amount?
2. Find the amount that 9 is 15% of.
3. 15% is 12 of what amount?
4. Find the amount that 6 is 50% of.
5. 32 is 50% of what amount?
6. 45 is 50% of what amount?
7. Find the amount that 75 is 75% of.
8. 75% is 60 of what amount?
9. 42 is 75% of what amount?

---

**Practice 2**

1. $4 is 10% of what amount?
2. $12 is 20% of what amount?
3. $10 is 15% of what amount?
4. $22 is 50% of what amount?
5. $80 is 75% of what amount?
6. $125 is 25% of what amount?

---

**Practice 3**

Suppose you are a sales clerk for a clothes shop. The shop is raising its sales prices up to regular prices. But someone lost the list of regular prices. Your job is to find the total amount that these amounts are part of.

1. These amounts are 25% of the total amount.
   a. $3 of $_____
   b. $4.50 of $_____
   c. $7 of $_____
   d. $10 of $_____
2. These amounts are 40% of the total amount.
   a. $1.20 of $_____
   b. $6 of $_____
   c. $15 of $_____
   d. $21 of $_____
3. These amounts are 60% of the total amount?
   a. $8 of $_____
   b. $15 of $_____
   c. $20 of $_____
   d. $24 of $_____

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# Unit 9: Percent Check

Solve these problems by using a proportion. Check your proportions by finding cross products or reducing ratios. Show all your math work.

**1.** $5 is 25% of what amount?

**2.** 12 feet is what percent of 72 feet?

**3.** Find 80% of 160 miles.

**4.** $80 is what percent of $2,400?

**5.** 28 acres is 10% of what amount?

**6.** Find 15% of $960.

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# Unit 10: Equivalents

Rename these numbers as equivalents. Reduce fractions to their lowest terms. Show all your math work.

**1.** Rename .55 as an equivalent fraction.

.55 =

**2.** Rename $\frac{1}{4}$ as an equivalent decimal.

$\frac{1}{4}$ =

**3.** Rename .6 as an equivalent percent.

.6 =

**4.** Rename 93% as an equivalent decimal.

93% =

**5.** Rename 20% as an equivalent fraction.

20% =

**6.** Rename $\frac{3}{5}$ as an equivalent percent.

$\frac{3}{5}$ =

**7.** Rename $4\frac{1}{5}$ as an equivalent mixed decimal.

$4\frac{1}{5}$ =

**8.** Rename 1.75 as an equivalent mixed number.

1.75 =

**9.** Rename $3\frac{1}{2}$ as an equivalent percent.

$3\frac{1}{2}$ =

**10.** Rename 4.6 as an equivalent percent.

4.6 =

**11.** Rename 150% as an equivalent mixed number.

150% =

**12.** Rename 210% as an equivalent mixed decimal.

210% =

**Score:**

_____ no. right

_____ no. wrong

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# From Percents to Equivalent Fractions

**A.** Rename percents as equivalent fractions. Reduce fractions to their lowest terms. Show all your math work on another sheet of paper.

1. 75% =
2. 56% =
3. 90% =
4. 68% =
5. 2% =
6. 6% =
7. 38% =
8. 71% =

**B.** 100 people were asked: "What day do you like best?" These sentences tell how they answered. Rename the percents as equivalent fractions. Reduce fractions to their lowest terms. Show your work.

1. 9% said Tuesday. 9% =
2. 3% said Wednesday. 3% =
3. 4% said Thursday. 4% =
4. 15% said Friday. 15% =
5. 46% said Saturday. 46% =
6. 23% said Sunday. 23% =

**C.** Read these word problems. Then rename the percents as equivalent fractions. Reduce fractions to their lowest terms. Show your work on another sheet of paper.

1. Mr. Lopez lowers the price of coffee in his grocery store. Coffee used to cost $7.49. He reduces the price by 20%. How much less is the coffee?

   20% =

2. Peter took a state math test. It had 30 problems. Peter got a score of 80%. How many problems did he get right?

   80% =

3. Wanda saves 25% of every paycheck. Her paycheck comes to $250 every two weeks. How much does Wanda save of each paycheck?

   25% =

4. Sal is a busboy at the Royal Cafe. He gets 10% of all the tips that the waiters and waitresses get in a day. Today they got $125.00. How much did Sal receive?

   10% =

**Bonus:** Solve the word problems. Use percents or fractions to find the answers.

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# From Decimals to Equivalent Fractions

**A.** Draw a line from each decimal to its equivalent fraction. The first is done.

**Group 1**

| | |
|---|---|
| 1. .999 | a. $\frac{9}{10}$ |
| 2. .9 | b. $\frac{9}{100}$ |
| 3. .09 | c. $\frac{999}{1000}$ |
| 4. .009 | d. $\frac{9}{1000}$ |

**Group 2**

| | |
|---|---|
| 5. .007 | e. $\frac{77}{1000}$ |
| 6. .7 | f. $\frac{7}{100}$ |
| 7. .07 | g. $\frac{7}{10}$ |
| 8. .077 | h. $\frac{7}{1000}$ |

**Group 3**

| | |
|---|---|
| 9. .033 | i. $\frac{33}{1000}$ |
| 10. .3 | j. $\frac{3}{100}$ |
| 11. .33 | k. $\frac{3}{10}$ |
| 12. .03 | l. $\frac{33}{100}$ |

**B.** Rename these decimals as equivalent fractions. Reduce fractions to their lowest terms. Show your work on another sheet of paper.

1. .4 =
2. .8 =
3. .30 =
4. .06 =
5. .042 =
6. .82 =
7. .450 =
8. .500 =
9. .226 =
10. .18 =

**C.** Read these word problems. Then rename the decimals as equivalent fractions. Reduce fractions to their lowest terms.

1. Terry sells hair ribbons that she makes. She sells a ribbon for $.50. How much money does she make if she sells 25 ribbons?

   a. .50 =

2. Mrs. Chu walks .3 mile to work. She walks the same distance back home. How far does Mrs. Chu walk in all?

   a. .3 =

3. Paolo fills his car up with 9 gallons of gas. The gas costs $.89 a gallon. How much does Paolo pay?

   a. .89 =

4. Rachel and Jimmy get an allowance. Rachel is older so she gets $.75 every week. Jimmy gets $.45. How much more does Rachel get?

   a. .75 =

   b. .45 =

5. Fernando delivers newspapers. He drives .2 mile from his house to Newton. From there he drives .75 mile to Crawley. How far is Crawley from his house?

   a. .2 =

   b. .75 =

**Bonus:** Solve the word problems. Use decimals or fractions to solve them.

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# From Decimals to Equivalent Percents

| Activity | Part of the Day | Equivalent Percent |
|---|---|---|
| 1. sleep | .333 | 33.3% |
| 2. school | .2 | |
| 3. work | .22 | |
| 4. meals | .085 | |
| 5. homework | .1 | |
| 6. basketball | .062 | |

**A.** This chart shows what part of the day a person spent on different activities. Each amount of time is shown in decimals. Read the chart. Then rename the decimals as equivalent percents. One is done.

**B.** Draw a circle around the percent that's equivalent to the decimal.

1. .667 = 667% 66.7%
2. .099 = .99% 9.9%
3. .75 = 75% 750%
4. .003 = .3% 3%
5. .073 = 7.3% 73%
6. .7 = .007% 70%
7. .847 = 8.47% 84.7%
8. .05 = 5% .5%
9. .2 = 200% 20%

**C.** Read the word problems. Rename the decimals as equivalent percents.

1. Rai makes a punch with these parts: .5 water, .45 lemon juice, .03 lime juice, and .02 orange juice. Does the punch have more fruit juice or water?

   **a.** .5 = **c.** .45 =

   **b.** .03 = **d.** .02 =

2. Isaac's batting average was .487 in May, .382 in June, and .407 in July. What was the difference in his average between May and July?

   **a.** .487 =

   **b.** .407 =

   **c.** .382 =

**Bonus:** Solve the word problems. Use decimals or percents to find the answers.

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# From Percents to Equivalent Decimals

**A.** Newspaper headlines sometimes use percents. Read these headlines. Then rename the percents as equivalent decimals.

***53% VOTE NO ON NEW TAX***

1. 53% =

***SAVE 25% TODAY AND TOMORROW***

2. 25% =

***PRICES FALL 2% IN JULY***

3. 2% =

***WORKERS WANT 8.5% PAY RAISE***

4. 8.5% =

***NEW COLA 99.9% SUGAR-FREE***

5. 99.9% =

***COMPANY'S PROFITS UP 25.5%***

6. 25.5% =

***33% MORE HIGH SCHOOLS CLOSED***

7. 33% =

***DAVIS WINS BY 15% OF VOTES***

8. 15% =

***49% MORE BABIES BY 1990***

9. 49% =

**B.** Draw a circle around the decimal that is equivalent to the percent in each problem.

1. 12% = .12 .012
2. 6% = .6 .06
3. 9% = .09 .009
4. 20.2% = 2.02 .202
5. 15.1% = 15.1 .151
6. .75% = .0075 7.50
7. 185% = .185 1.85

**C.** Read these word problems. Then rename the percents as equivalent decimals.

1. In one semester, Marco took four history tests. Each test had 50 questions. Marco scored 60% on the first test, 72% on the second test, 91% on the third test, and 85% on the fourth test. How many questions did he get right on each test?

   **a.** 60% = **c.** 91% =

   **b.** 72% = **d.** 85% =

2. Steve got paid on Friday. He used 5% of his check to buy groceries, 24% to pay his car loan, 15.5% to pay bills, and 30.5% to buy clothes. What percent was left?

   **a.** 5% = **c.** 30.5% =

   **b.** 15.5% = **d.** 24% =

**Bonus:** Solve the word problems. Use decimals or percents to find the answers.

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# From Fractions to Equivalent Decimals

**A.** Rename these fractions as equivalent decimals.

1. $\frac{8}{10}$ feet = _____ feet
2. $\frac{3}{10}$ miles = _____ miles
3. $\frac{5}{100}$ seconds = _____ seconds
4. $\frac{7}{100}$ gallons = _____ gallons
5. $\frac{127}{1000}$ yards = _____ yards
6. $\frac{8}{1000}$ miles = _____ miles
7. $\frac{14}{100}$ gallons = _____ gallons

**B.** Rename these fractions as equivalent decimals by using a proportion. Round answers to the nearest thousandth. Show your work on another sheet of paper.

1. $\frac{3}{5}$ =
2. $\frac{2}{9}$ =
3. $\frac{7}{8}$ =
4. $\frac{3}{8}$ =
5. $\frac{4}{5}$ =
6. $\frac{7}{11}$ =
7. $\frac{9}{20}$ =
8. $\frac{11}{15}$ =

**C.** Rename these fractions as equivalent decimals by dividing the numerator by the denominator. Round decimals to the nearest hundredth. Show your work on another sheet of paper.

1. $\frac{5}{16}$ =
2. $\frac{2}{3}$ =
3. $\frac{3}{8}$ =
4. $\frac{7}{20}$ =
5. $\frac{11}{15}$ =
6. $\frac{1}{7}$ =
7. $\frac{8}{9}$ =
8. $\frac{3}{5}$ =

**D.** Read these word problems. Rename the fractions as equivalent decimals. Show your work on another sheet of paper.

1. Mike and five friends buy a pizza. The pizza costs $8.75. How much is $\frac{1}{6}$ of that amount? (Round decimals to the nearest hundredth.)

   $\frac{1}{6}$ =

2. Room 121 elected a representative to the student council. Jose got $\frac{3}{5}$ of the votes. Merry got $\frac{1}{4}$ of the votes and Lars got $\frac{1}{20}$ of the votes. What percent more votes did Jose get than Merry? than Lars?

   a. $\frac{3}{5}$ =

   b. $\frac{1}{4}$ =

   c. $\frac{1}{20}$ =

**Bonus:** Solve the word problems. Use fractions or decimals to find the answers.

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# From Fractions to Equivalent Percents

**A.** Rename the fractions as equivalent percents.

1. $\frac{23}{100}$ =
2. $\frac{1}{10}$ =
3. $\frac{1}{100}$ =
4. $\frac{87}{100}$ =
5. $\frac{3}{10}$ =
6. $\frac{148}{1000}$ =
7. $\frac{250}{1000}$ =
8. $\frac{12}{1000}$ =

**B.** Rename these fractions as equivalent percents by using a proportion. Round decimals to the nearest hundredth. Show all your work on another sheet of paper.

1. $\frac{1}{4}$ =
2. $\frac{9}{20}$ =
3. $\frac{3}{5}$ =
4. $\frac{5}{6}$ =
5. $\frac{3}{8}$ =
6. $\frac{2}{3}$ =
7. $\frac{5}{16}$ =
8. $\frac{4}{7}$ =

**C.** Rename these fractions as equivalent percents by dividing the numerator by the denominator. Round decimals to the nearest hundredth. Show all your work on another sheet of paper.

1. $\frac{1}{2}$ =
2. $\frac{4}{5}$ =
3. $\frac{1}{3}$ =
4. $\frac{5}{8}$ =
5. $\frac{7}{12}$ =
6. $\frac{1}{20}$ =
7. $\frac{4}{9}$ =
8. $\frac{3}{16}$ =

**D.** Read these word problems. Rename the fractions as equivalent percents. Round decimals to the nearest tenth. Show all your work on another sheet of paper.

1. A history test has 18 true-false questions. $\frac{1}{3}$ of the answers are false. How many questions is that?

   a. $\frac{1}{3}$ =

2. Mel works 32 hours a week as an office aide. He types letters for $\frac{1}{2}$ of the time, files $\frac{4}{16}$ of the time, and answers phones $\frac{1}{4}$ of the time. How many hours per week does he type? file? answer phones?

   a. $\frac{1}{2}$ =

   b. $\frac{4}{16}$ =

   c. $\frac{1}{4}$ =

**Bonus:** Solve the word problems. Use fractions or percents to find the answers.

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# Equivalent Mixed Amounts

**A.** Rename these mixed decimals as mixed numbers. Reduce fractions to lowest terms. Show all your work on another sheet of paper.

1. 2.125 inches = _____ inches
2. 1.188 feet = _____ feet
3. 5.7 miles = _____ miles
4. 1.45 meters = _____ meters
5. 10.08 gallons = _____ gallons
6. 3.60 seconds = _____ seconds
7. 8.222 pounds = _____ pounds
8. 6.05 ounces = _____ ounces
9. 11.3 feet = _____ feet
10. 20.05 inches = _____ inches

**B.** Rename these percents as mixed numbers. Reduce fractions to lowest terms. Show all your work on another sheet of paper.

1. 110% =
2. 350% =
3. 101% =
4. 275% =
5. 122% =
6. 513% =
7. 386% =
8. 432% =
9. 1000% =
10. 1350% =

**C.** Rename these mixed numbers as equivalent mixed decimals. Round decimals to the nearest hundredth. Show all your work on another sheet of paper.

1. $2\frac{3}{5}$ feet = _____ feet
2. $1\frac{1}{2}$ ounces = _____ ounces
3. $3\frac{1}{8}$ inches = _____ inches
4. $5\frac{2}{3}$ pounds = _____ pounds
5. $4\frac{5}{16}$ inches = _____ inches
6. $7\frac{1}{3}$ seconds = _____ seconds
7. $9\frac{10}{24}$ hours = _____ hours
8. $8\frac{33}{100}$ miles = _____ miles

**D.** Rename these mixed numbers as equivalent percents. Round decimals to the nearest tenth. Show all your work on another sheet of paper.

1. $1\frac{1}{2}$ =
2. $3\frac{3}{8}$ =
3. $5\frac{4}{5}$ =
4. $7\frac{1}{4}$ =
5. $2\frac{3}{7}$ =
6. $8\frac{7}{10}$ =
7. $1\frac{3}{16}$ =
8. $2\frac{5}{9}$ =
9. $10\frac{4}{17}$ =

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# Unit 10: Equivalent Check

**A.** Write the fraction that shows the shaded parts of each shape. Then rename the fraction as an equivalent decimal and percent. Round answers to the nearest thousandth. Show your math work on another sheet of paper.

**1.**

a. fraction: _____

b. decimal: _____

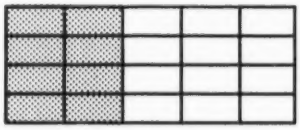
c. percent: _____

**3.**

a. fraction: _____

b. decimal: _____

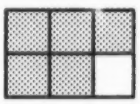
c. percent: _____

**5.** 

a. fraction: _____

b. decimal: _____

c. percent: _____

**2.** 

a. fraction: _____

b. decimal: _____

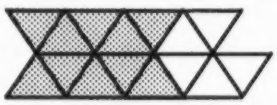
c. percent: _____

**4.**

a. fraction: _____

b. decimal: _____

c. percent: _____

**6.** 

a. fraction: _____

b. decimal: _____

c. percent: _____

**B.** This chart shows equivalent fractions, decimals, and percents. Finish the chart. Find the equivalent fractions, decimals, and percents. Reduce answers to lowest terms. Round decimal amounts to the nearest thousandth. Show all your work on another sheet of paper.

| | Equivalent Amounts | | |
|---|---|---|---|
| | **Fraction** | **Decimal** | **Percent** |
| 1. | | .6 | |
| 2. | $\frac{7}{8}$ | | |
| 3. | | | 14% |
| 4. | | .006 | |
| 5. | $\frac{1}{9}$ | | |
| 6. | | | 325% |
| 7. | $3\frac{5}{23}$ | | |
| 8. | | 10.56 | |

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# Decimals and Percents Review

Solve these problems. Round amounts that do not divide evenly to the nearest hundredth. Show all your work on another sheet of paper.

**Set A**

1. 3.1 + 4.85 =
2. .8 × .34 =
3. .75 − .47 =
4. 3.02 − .98 =
5. 4 − 2.5 =
6. .02 × 3.89 =
7. 1.2 ÷ 4 =
8. 12 + 8.03 =
9. 2.57 ÷ .10 =
10. .2 + .86 + 1.352 =
11. 3.3 ÷ 2.1 =
12. 12.55 ÷ .25 =

---

**Set B**

1. What's 10% of 28?
2. 12 is 25% of what amount?
3. 10 is what percent of 110?
4. 15 is what percent of 65?
5. Find 8% of $125.75.
6. 40 is 25% of what amount?
7. 12 of 28 is what percent?
8. 72 is 20% of what amount?
9. What's 60% of $42?

---

**Set C**

1. Find the equivalent percents:
   a. $\frac{3}{7}$ = c. $\frac{6}{100}$ =
   b. .65 = d. .9 =
2. Find the equivalent decimals:
   a. $\frac{1}{12}$ = c. 32% =
   b. $\frac{69}{100}$ = d. 3.5% =
3. Find the equivalent fractions:
   a. 15% = c. .325 =
   b. 75% = d. .3 =
4. Find the equivalent mixed numbers:
   a. 128% = c. 998% =
   b. 7.08 = d. 3.7 =
5. Find the equivalent mixed decimals:
   a. $2\frac{1}{3}$ = c. 333% =
   b. 189% = d. $5\frac{2}{5}$ =
6. Find the equivalent percents:
   a. 4.5 = c. 9.04 =
   b. $3\frac{1}{2}$ = d. $6\frac{2}{3}$ =

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